Tracking and Controlling Persons: Identification for Control in Cognitive Behaviours and
Cultural Practices

by

Nicolas J. Bullot

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Department of Philosophy

University of Alberta

Abstract

    This research aims (i) to demonstrate the unity of the phenomena of person identification and control and (ii) to propose the first philosophical theory that uses a single conceptual framework to describe and explain these phenomena. Chapter 1 introduces the philosophical significance of the topic and the psychohistorical framework defended in the book. In chapters 2, I open my enquiry with an investigation of the complexity of the skills and practices enabling the identification and control of persons. This complexity leads me to propose that both everyday judgments of identification (chapters 2 and 6) and scientific research on identification (chapter 3-5) rely on heuristics. I understand *heuristics* as rules and patterns of thought and action that facilitate human learners' decision-making about complexity. In chapter 3, I derive my account of heuristics from research developed by philosophers of science and cognitive scientists, which demonstrates that heuristics generate both explanatory insights and reasoning biases. Arguments from the history of science and the philosophy of explanation suggest that scientists have adopted antagonistic heuristic strategies in their attempts to explain how persons are identified and controlled. In chapter 4, I focus my analysis on demonstrating that the psychological and cognitive sciences of person identification are typically guided by *mechanistic heuristics*. In particular, I argue that the reductive explanations proposed by prominent mechanistic models of face perception are biased by individualistic heuristics and psychological universalism. These mechanistic models

fail to account for the important role played by social cooperation and cultural transmission in the learning of person-identification skills. By contrast, in chapter 5, I show how in the social sciences and the humanities research on person identification and control is guided by heuristics aimed at providing rich ("thick") interpretative description of context-specific phenomena. These *contextualistic heuristics* prioritise the description of technical innovations and cultural contexts supporting identification practices. However, this focus on cultural phenomena has resulted in other biases associated with social constructionism and the rejection of mechanistic explanations. I conclude from chapters 2-5 that theoretical integration in the sciences of person identification has been hindered by the antagonism between mechanistic and contextualistic heuristics. To integrate mechanistic and contextualistic programmes, I use chapters 6-9 to present a philosophical framework that combines contributions from both traditions: *the psychohistorical theory of person identification and control*. In chapter 6, I show that this theory satisfies three requisites for theoretical integration in research on person identification. First, the theory combines (i) an ontological model of individual persons and person kinds with (ii) an account of how human learners use person-tracking mechanisms to become sensitive to the ontic characteristics of individual persons and person kinds. Second, the ontological model of the theory adopts a contextualistic and historical understanding of the kinds of person that can be tracked and identified. Third, in integrating contextualistic hypotheses about persons with psychological and epistemological hypotheses about identification mechanisms, the theory generates a series of novel hypotheses. In particular, the theory posits that it is important to distinguish three different kinds of person identification: recognition-based, heuristic-based, and explanation-

based identification. In chapter 7, I illustrate the productivity of the psychohistorical framework by using the psychohistorical theory to analyse the social control of persons. To this end, I integrate a mechanistic argument about the causal control of persons with contextualistic research on the history of social control. I argue that the integrative tracking of target persons provides controllers with sensitivity to the mechanisms that cause the persistence and behaviour of these targets (i.e., personal persistence mechanisms, or "person-making" mechanisms). Such sensitivity facilitates robust causal interventions on the targets' persistence mechanisms. I argue that historiographical and sociological evidence regarding the history of social control in modern states supports this argument, which further vindicates the psychohistorical approach. In chapter 8, I demonstrate that the psychohistorical approach can be integrated with important research on cultural learning and transmission. Furthermore, I argue that the psychohistorical framework makes important contributions to the science of cultural learning. In chapter 9, I demonstrate the advantages of the psychohistorical theory over individualistic models for explaining acts of violence and radical forms of social control. Specifically, I provide a detailed analysis of honour-related violence and argue that individualistic models do not provide an adequate explanation of this type of behaviour. Chapter 10 summarises the arguments presented in the preceding chapters and provides conclusive thoughts about the applications of the psychohistorical framework.

Preface

The research presented in chapters 1, 2, 3, 5, 7, 8, and 9 is new. These chapters have never been published before. Two chapters of this thesis include revised parts of articles previously published in peer-reviewed journals. Specifically, chapter 4 includes extensively revised versions of a cluster of arguments that I first proposed in:

> Bullot, N. J. (2014a). Explaining person identification: an inquiry into the tracking of human agents. *Topics in Cognitive Science, 6*(4), 567-584. doi: 10.1111/tops.12109

Chapter 6 outlines a theory of person identification that amends and greatly expands the account of the tracking of agents that I offered in this piece:

> Bullot, N. J. (2015). Agent tracking: a psycho-historical theory of the identification of living and social agents. *Biology & Philosophy, 30*(3), 359-382. doi: 10.1007/s10539-014-9447-x

These two articles were my first attempts at using a psychohistorical approach to explain person identification. I first defended the psychohistorical approach in my research on the identification and appreciation of works of art (Bullot, 2009a, 2014b, 2014c; Bullot & Reber, 2013a, 2013b). The most significant piece from that series is this target article, written in collaboration with Rolf Reber:

> Bullot, N. J., & Reber, R. (2013a). The artful mind meets art history: toward a psycho-historical framework for the science of art appreciation. *Behavioral and Brain Sciences, 36*(02), 123-137. doi: 10.1017/S0140525X12000489

Our responses to commentators from *Behavioral and Brain Sciences* were published as:

Bullot, N. J., & Reber, R. (2013b). A psycho-historical research program for the integrative science of art. *Behavioral and Brain Sciences, 36*(2), 163-180. doi: 10.1017/S0140525X12002464

The research I present in *Tracking and Controlling Persons* is informed by these debates on artistic appreciation because there are parallels between (i) identification and control associated with persons and (ii) identification and control associated with artworks. However, while writing *Tracking and Controlling Persons*, I found it necessary to keep this work focused on problems that are mostly distinctive of person identification and control. I hope to find an opportunity in the future to write more directly about the relations between person identification (and control) and artwork identification (and control).

Acknowledgments

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1 A Psychohistorical Enquiry into Person Identification and Control

Enquiries into the topics of the nature, identification, and social control of human persons are pervasive in both folk and scientific cultures. These topics fascinate us because we are persons, and we are infatuated with investigating and manipulating persons. To live autonomously in a modern state, human agents constantly need to keep track and identify other persons and gain at least limited control of the behaviours of others. As we learn about our selves and the selves of other persons, we are also often seeking to know about whomever who knows about us. As we relentlessly attempt to control what we will become, we constantly have to cooperate to explain and manipulate the mechanisms that make us who we are. Processes of person identification, person tracking, and person control are therefore ubiquitous. This monograph is an enquiry into the human obsession with learning about and manipulating persons. My goal is to introduce and defend a new philosophical approach to person identification and control, which aims to integrate programmes of research that have too often remained insulated from one another.

1.1 Significance of person identification and control

I shall begin with several arguments that justify considering person identification as highly significant with respect to our philosophical understanding of human cognition and sociability. The general significance of person identification and control is captured by an argument from interpersonal tracking. This rationale derives from the idea that the tracking and identification of persons is important because person-identification practices are core behaviours of human sociability.

The ubiquity of interpersonal tracking and identification

In the course of a lifetime, each citizen of urbanised modern states encounters a myriad of persons and develops lasting interpersonal bonds with a subset of them. These interpersonal bonds are made possible by practices of person identification. Interpersonal behaviours that require processes of person identification include the act of using a proper name to refer to a person (Kripke, 1980; Valentine, Brennen, & Brédart, 1996), the understanding and prediction of other persons' mental states and attitudes (Bloom, 2004; Dennett, 1987), the act of conversing with relevance (Sperber & Wilson, 1986/1995), the assessment of an agent's trustworthiness (Gambetta, 2000; Sterelny, 2012), and the moral understanding of and empathic response to births, amorous and sexual relationships (Nussbaum, 1995), and illnesses or deaths (McMahan, 2002; Singer, 1994).

Consider first the art of *conversing*, an important manifestation of human sociability (Dunbar, 1996). A discussion between two conversationalists depends on the capacity of two agents to reciprocally identify, track, and control each other's discourse. Such conversational tracking and monitoring requires integration of visual and auditory signals as emitted by a single causal source (Calvert, Brammer, & Iversen, 1998), the linguistic decoding of syntactic and referential information (Bloom, 2000; Sagi & Rips, 2014; Strawson, 1959), and cooperative efforts made by the partners for achieving conversational relevance (Grice, 1989) and reciprocal understanding (Apperly, 2011; Bogdan, 2000). These mental processes contribute to, or rely, on mechanisms for identifying persons. This is evidenced by the fact that a conversationalist's capacity for relevance is typically impaired by the misidentification of a conversational partner. For example, as illustrated in chapter 2 (see the case of Will and William West), if a penitentiary clerk misidentifies one prisoner for another inmate, this misidentification can impair the conversational relevance of what the clerk says to any of the two prisoners. Consequently, person identification is significant because it is an important requirement of the art of conversing, which is itself of high import to human sociability.

This significance is not limited to the spatiotemporal boundaries of perceptual and conversational encounters (see chapter 4). To form lasting interpersonal bonds and social

coalitions, learners must keep track of sets of persons within spatiotemporal frames that are much broader than the frame of a single perceptual encounter or conversation. When tracking persons within a context extending over days, weeks, and years, learners have to cope with lasting intervening gaps in which perception of their targets is not possible. To compensate these gaps, learners use cognitive resources such as memory systems, imagination, and reasoning to interpret varied sources of evidence about the targets of their identification acts (Bullot, 2009b, 2011). Such sources of evidence include signals that a target communicates deliberately (e.g., letters, emails, photographs, recorded messages) and traces of the target's behaviour left unintentionally (e.g., displaced objects, latent fingerprints, bodily fluids, digital traces of a target's activities on the Internet).

The ability to integrate personal and interpersonal evidence from *different sources and media* into an interpretative model of a target – and of that person's historical context – provides important benefits and powers to human learners. This integration provides a means for the learner to keep an up-to-date record of the target's history and projects, to become sensitive to unperceived changes in the target's causal history, to justify beliefs about the target, and to guide actions aimed at influencing or manipulating the mechanisms that control the target (see chapter 7). Although very little research work has been conducted on the *integrative* tracking and identification of persons, it is clear that such tracking is of high import and raises important questions. For example, what are the integrative mechanisms that support the capacity and skills for tracking and identifying human individuals (see chapter 6)? What are the practices of integrative tracking that facilitate the control of persons (see chapter 7)? Are some of the practices of person identification endemic to unique cultural and historical contexts (see chapter 8 and 9)? These are some of the questions that I will address in the next chapters.

The dependence of moral attribution and social distributions on person identification

Another aspect of the significance of person identification is moral and political. Important yet understudied[1] connections tie person identification with the ethics and politics of social control. Consider first an argument from the dependence of moral and social attribution on person tracking.

To attribute moral values or rights to target individuals, moral assessors need the capacity to make judgements about these target individuals. In the philosophy of language and reference (G. Evans, 1982; Gerrans, 2014; Jeshion, 2010), this capacity is referred to as the capability to form a *singular judgment* (or *singular thought*), which is a judgment about a *particular* entity rather than a class of individuals. As suggested by both philosophers (Frankfurt, 1971; Rorty, 1976; Strawson, 1959) and psychologists (Heider, 1944, 1958; Woolfolk, Doris, & Darley, 2006), having the capacity to identify persons via singular judgments is a requisite to the capacity to attribute agency and moral values to persons. The tracking of persons is a necessary component of singular thoughts that subsume a person's action under socially normative and moral concepts (e.g., autonomous vs. heteronomous, praiseworthy vs. blameworthy, virtuous vs. corrupt, and trustworthy vs. untrustworthy).

Consider the example of the assessment of a person's trustworthiness (Gambetta, 1988; O'Neill, 2002). One reason for deeming a person trustworthy come from an understanding of trust as a form of encapsulated interest (Hardin, 2002).[2] On the interest-based account of trust, Alice – the truster – trusts Mark – the trustee – because Alice thinks that it is in Mark's interest to take her interests in the relevant matter seriously. If her judgement is true, Mark is motivated to act as a trustworthy person in his relationship with Alice because Mark values the continuation of his relationship with Alice. He is motivated to incorporate her interests in

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[1] Person identification has not been of a central topic in moral and political philosophy. For example, although normative theories of justice discuss the social control of persons, neither John Rawls' (1971) theory of justice nor Michael Walzer's (1983) contextualistic theory of the "spheres of justice" directly engage with the theory of person identification.

[2] Other accounts emphasise that trust is an affective attitude (K. Jones, 1996).

his own interests. To assess Mark's trustworthiness accurately, Alice therefore needs to exert a capacity to identity Mark and track aspects of Mark's behaviour showing that Mark's interests encapsulate her own interests. Had Alice confused Mark and Jack, mistakenly attributing Jack's interests and feelings to Mark, Alice's judgement about Mark's trustworthiness would be lacking in truth and reason. Therefore, person identification is a critical condition of the assessment of a person's trustworthiness.

The capacity for differentiating one person's agency from another's is critical to other kinds of moral and social evaluations. Like a judgment about the artistic value of individual artworks, a learner's moral and social appraisal of a target person needs to be sensitive to the fact that the target is definitely *not fungible* (i.e., interchangeable with another individual of the same kind; see, e.g., Nussbaum, 1995). For example, if a judgment about the value of a target artwork fails to identify that the work is a forgery, the appreciation of that work is typically misinformed and lacks in relevance and reason (Bullot & Reber, 2013a). Likewise, if a learner's moral appraisal of a person fails to identify that this person is an impostor (see the impersonations presented in chapter 2), then this moral appraisal is misinformed and lacks in relevance and reason too.

Beyond moral and interest attributions, there exist other important linkages between person identification and social relations (Fiske, 1993; Fiske, Haslam, & Fiske, 1991). For example, contemplate three of the four "relational structures" and "models" that Alan P. Fiske (1991/1993, 1992) describes as "universal" and "elementary" forms of sociality: the model for representing persons as equivalent members of the same social category and thinking that the group transcends its members (*communal sharing*), the model for keeping track of social hierarchies (*authority rankings*), and the model for specifying deviations from a standard of balance among persons (*equality matching*). To accurately track and interpret any of these social relations in a historical context, a learner requires the ability to accurately track and identify persons.

Take equality matching. Its manifestations include tit-for-tat reciprocity (Axelrod, 1984), eye-for-an-eye retaliation, contributions in which shares are equated one for one, and in-kind

compensation to restore balance (Fiske, 1991/1993). All of these social phenomena require the tracking and identification of persons. For example, if Lisa were unable to learn about Muhammad and John's histories of economic transactions, Lisa would be unable to learn whether one is indebted to the other. Thus, Lisa requires a capacity for person identification in order to assess balance and unbalance in equality matching. A similar reasoning applies to models that track authority rankings, such as the obedience of subordinates and the use of prerogatives by leaders.

Person identification also relate to the topics of distributive justice and governance by means of social sorting (Hacking, 2007; Lyon, 2009). *Distributive justice* refers to the principles and practices that ought to regulate a just allocation of goods in a society (Rawls, 1967/1999; Walzer, 1983). The description of person-identification practices are typically not part of ideal theories of distributive justice (e.g., Rawls, 1971). However, research in the social sciences that I will discuss in chapter 7 has shown that the institutions that permit social distributions of goods and punishments in modern states routinely rely on practices aimed at identifying and sorting persons (e.g., Caplan & Torpey, 2001; Groebner, 2004/2007; Lyon, 2003).

In a modern state, both governmental and private agencies use the tracking of individual persons and of their relevant circumstances and history to control each person's access to social goods and punishments. The *goods* whose distribution can demand identification and tracking of target *benefiters* include environmental and infrastructural services (e.g., access to clean water, electricity, public transportation, banking services, Internet access, personal accounts on websites), moral and legal rights (e.g., ownership, electoral, migratory, driving rights), and welfare services (e.g., health care services, child support benefits, educational services, unemployment benefits). The institutions that use social identification for regulating the distribution of these goods include revenue agencies that function to levy taxes (Murphy & Nagel, 2002), electoral commissions, health care institutions (Buchanan, 2009; O'Neill, 2002), welfare agencies (Pierson, 2001), and audit organisations (Power, 1997).

The *punishments* whose distribution demands identification of target *suspects* and *convicts* include legal corrections and punishments in response to offensive and criminal civil behaviours (Duff, 2013; Garland, 2001). For example, administration of fines, penalties, confinements, incarcerations, and executions typically follow procedures through which learners from a law-enforcement agency accumulated incriminating identifying information about a set of persons from a variety of contexts and traces (Bertillon, 1896; Galton, 1892; Locard, 1923/1948, 1932). Moreover, as noted in chapter 7, political systems such as authoritarian governments and states at war use surveillance and punishment to strengthen social control. In this case, again, the administration of these control procedures is guided by practices aimed at identifying the targets of surveillance and punishment (e.g., target dissidents, activists, whistle-blowers, deserters, enemy combatant). Person identification is therefore necessary to the distribution of social punishment in a variety of social and political contexts.

The arguments from identification for person control

As I noted above, human learners and organisations use person identification to guide manipulations aimed at achieving partial *causal and social control* over both the self and other agents. These manipulations, which are beneficial or detrimental to their targets, are essential parts of the fabric of human sociality.

I should remark that the necessity for learners to track entities to controlling them is a general constraint on the life of organisms (Bullot, 2009b; Sterelny, 2003). In the case of our persistence as humans, many kinds of threatening entities need to be tracked over time in order to enable our ability to survive and control our relations to their causal characteristics. For example, the ecology of Earth can be dramatically altered by potentially catastrophic events like earthquakes, asteroid impacts, mutating viruses causing pandemics, environmental and climate crises, and the use of weapons of mass destruction. Such complex risks provide a rationale for tracking and explaining seismic activity on Earth, near-earth objects in space, microorganisms, environmental crises and climate change (Bullot, 2014b), and stockpiles of

weapons of mass destruction. In all these examples, tracking is a requirement for partial causal control of these risks.

That being noted, the everyday activities of most humans' are centred around the tracking and control of other persons (e.g., Sterelny, 2003; Tomasello, 2014). This need begins very early in human development (Bloom, 2004; Gelman, Noles, & Stilwell, 2014; S. C. Johnson, 2003). Consider the domain of the relationship between an infant – let's refer to her as "Julia" – and her parents. Julia needs to communicate signals influencing her parents' behaviour in order to secure that their actions provide her with resources necessary to her development. To influence and control her parents (e.g., by expressing emotional signals), she needs to acquire the capacity to track and identify her parents (Millikan, 1998). Reciprocally, to provide Julia with opportunities for safe development, Julia's parents need to communicate with Julia (Fernald, 1992) for intervening on Julia's behaviour and fostering her safe development. These parenting tasks require Julia's parents to allocate resources to identify, and keep track of Julia in a wide range of contexts.

As noted above, the link between person tracking, person identification, and person control is clear in the case of distribution of social goods and punishments. The argument applies to other types of interpersonal relations too. Consider again the example of a discussion between two persons. Dialogues are contexts in which person tracking can contribute to either cooperative or coercive control. For example, when Paula succeeds in persuading Mohammad that her opinion is correct by using a good argument, Paula's argumentative success signals that she has found a non-coercive method to modify Mohammad's beliefs, and thus to intervene on – and exert causal control on – some of his mental states. By contrast, if George orders Mohammad to perform an action while tracking him at gunpoint, George exerts a coercive form of control over Mohammad's action. In both cases, however, tracking Mohammad over time is necessary condition to exert causal control on Mohammad's behaviour and mental states.

Analysing governance and social distribution in terms of power enabled by social mechanisms (Hedström & Swedberg, 1996, 1998; Hedström & Ylikoski, 2010) reveals

linkages between person identification and person control. In chapter 7, the potency of the mechanistic approach has led me to formulate arguments from the control of persons by means of identification and tracking, which again highlight the importance of person identification. The reasoning that I propose as the core rationale for the theory of person control is an argument about the control of persons' persistence mechanisms (see "argument from control of person-making mechanisms" in chapter 7).

The anguish caused by person misidentifications and identification biases

Lastly, if the preceding points were not sufficient to convince some readers that the significance of person identification is major, then it is also possible to consider the significance of person misidentifications and identification biases. As discussed in chapters 2, 6, and 8, the examination of historical cases is useful in appraising the significance of person identification and its role in person control.

Brain injuries and mental disorders can impair a patient's ability to recognise and identify persons. Such misidentifications can have dismal consequences for both the patient and the patient's social entourage. In chapter 4, I discuss psychological theories that aim to explain the mechanisms causing disorders like prosopagnosia – a syndrome in which a patient is unable to recognize previously familiar faces – and Capgras delusional syndrome, in which a patient adopts the delusional belief that a loved one has been replaced by a look-alike impostor.

Brain injuries are not the only factors that induce person-misidentification errors of high import. Healthy and neurologically typical learners often misidentify persons, either in everyday slips (Fiske et al., 1991; Young, Hay, & Ellis, 1985) or more consequential forensic misidentifications (Lampinen, Neuschatz, & Cling, 2012). One of the most researched cases in the latter category are wrongful criminal convictions involving eyewitness misidentifications (Twining, 1983/2006). These misidentifications are known to be common (Lampinen et al., 2012; Loftus, 1975, 1979/1996), and they have dreadful social costs as miscarriages of justice (see chapter 2).

The offenses caused by person misidentifications, however, are not limited to the adjudication of psychiatric and criminal cases. More generally, misidentifications typically pave the way to actions that violate rules of distributive justice. In any context in which Social Good 1 and Social Good 2 are deemed justly allocated to Person 1 and Person 2, respectively, misidentifying Person 2 for Person 1 (or vice-versa) may result in an unjust allocation these goods. Illegal or unjust allocation of social goods can also result from the use of deception, as illustrated by cases of deceptive impersonations in interpersonal relations and online behaviours (see chapters 2, 6, and 7).

Although veridical person identification is an epistemic requirement of relevance in moral judgments (see above), evidence also suggests that the connections between person-identification processes and affective responses dominate detached reasoning and bias moral and political decision-making (Singer, 2009; Slovic, 2007). Take for example the experimental study conducted by Small, Loewenstein, and Slovic (2007).

To analyse the contexts that motivate charitable donations, Small and colleagues (2007) paid participants in a psychological experiment and gave them the opportunity to donate some of the earned money to *Save the Children*, an organisation that supports children in poverty. One group was given general information about the need for donations, including statements like "In Zambia, severe rainfall deficits have resulted in a 42 percent drop in maize production from 2000. As a result, an estimated three million Zambians face hunger." A second group was provided identifying information about a seven-year-old Malawian girl named Rokia; they were told that "Any money that you donate will go to Rokia, a 7-year-old girl from Mali, Africa. Rokia is desperately poor, and faces a threat of severe hunger or even starvation. Her life will be changed for the better as a result of your financial gift."

Those receiving information about Rokia gave significantly more than those receiving only general information. Consistent with other findings (Small & Loewenstein, 2003, 2005), these results suggest that human decision-makers will spend far more to rescue an identifiable victim than they will use to save a "statistical life" (Singer, 2009). Thus, person identification

is significant because person-identification processes can manipulate feelings and moral decision-making in unexpected and problematic ways.

1.2   The universalistic theory of identification in philosophy and its limitations

The significance of person identification and control is acknowledged in philosophy, the cognitive and social sciences, and the humanities. However, the research motivated by this acknowledgement often remains piecemeal and disconnected. To introduce the problem of the disunity of the scholarship on person identification, I shall first analyse the limitations of an influential philosophical approach to identification and then consider, in section 1.3, the interdisciplinary challenges posed by the fragmentation of empirical research investigating person identification.

Strawson's universalistic model of identification

Since at least Peter F. Strawson's (1959, 1997) work and his development of the logical theory of reference introduced by Gottlob Frege (1892/1997) and Bertrand Russell (1905, 1910, 1914/1956), philosophers have used a variety of identification-related concepts to investigate the nature of reference, predication, and intentionality. This tradition encompasses investigation of the *identifying reference* to a particular (Strawson, 1959; 1974b: p. 46), the nature of *identity-statements* (Strawson, 1974b: p. 51-56), the semantic and psychological functions of *demonstrative identification* (Campbell, 2002; G. Evans, 1982; Strawson, 1959), and the conceptual resources associated with the *ability to identify* individuals and kinds (Millikan, 1998, 2000). Some works from this tradition have proposed theories of the tracking and identification of human persons (Frankfurt, 1971; Murez & Smortchkova, 2014; Strawson, 1959).

Strawson's (1950, 1959, 1974b) work[3] is a pioneering contribution to that tradition, which has led many scholars to acknowledge that identification is a topic of foremost

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[3] Strawson discussed the topic of identification in several articles and books. In addition to *Individuals* (Strawson, 1959) and his work about predication (Strawson, 1974b), Strawson sketched a contextualistic theory of identifying reference in his critique of Russell's theory of

philosophical significance. Because of its importance, I need to examine Strawson's account in some detail. Several of Strawson's celebrated contributions come from the first chapters of *Individuals* (1959), which propose a descriptive metaphysics of identification and reference.

Strawson (1959) uses *descriptive metaphysics* to refer to an enquiry into general questions regarding the conceptual scheme that humans use to think about the world. At the outset of *Individuals*, Strawson explains that he intends to describe the kind of entities that is the most basic in respect to our discursive and referential practices (1959: p. 38-58). Candidate entities he examines include "*events* and *processes*, *states* and *conditions*" (1959: p. 46 f.), material bodies, experiences, and "theoretical constructs" (1959: p. 44-45).

Strawson holds that *material bodies* are the most basic entities within our conceptual scheme (Strawson, 1959: p. 39). Material bodies are basic with respect to our reference practices because, he argues, they are the most elementary and pervasive components of our spatiotemporal world. We can think of material bodies without having to depend on thoughts about more abstract entities like theoretical constructs. To defend this thesis, Strawson presents novel arguments about identification and the conceptual scheme that we use to think about individuals in the world.

Demonstrative reference, descriptive identification, and reidentification

To introduce identification, Strawson (1959) considers linguistic reference to a particular entity in the context of a conversation with an audience. Strawson calls this type of identification practice *identifying reference* (1959: p. 16), which subsumes two types of identification practices (1959: p. 17-20).[4] The first type of identifying reference, often

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descriptions (Strawson, 1950); and he discussed the ontology and epistemology of identification in several other articles (Strawson, 1956, 1974a, 1976/1997).

[4] Although Strawson is a staunch critique of Russell's account of perceptual experience and his theory of description (see Strawson, 1950), Strawson's (1959) distinction between identification understood as *demonstrative reference* and identification understood as *descriptive identification* is nonetheless influenced by Russell's distinction between *knowledge by acquaintance* and *knowledge by description* (e.g., Russell, 1910, 1913/1984, 1914/1956).

referred to as *demonstrative reference* or *demonstrative identification*,[5] occurs when the hearers pick out the referent as a currently perceived entity. For example, a colleague of Strawson points to someone in a group and make this utterance "This is Strawson." In such a case, the colleague's audience successfully understands the identifying reference made by that speaker when they attend to and identify the same individual as the speaker.

The second type of identifying reference, *story-relative identification*, also known as *descriptive identification*, occurs when the audience of a speaker picks out the speaker's referent as falling under a description (Strawson, 1959: p. 18). For example, a literary critic may refer to Franz Kafka descriptively by uttering the expression "the man who wrote *The Trial* (1925/2009)." To succeed at picking up a real individual, descriptive identifications need to be related to other spatiotemporal identifications that, eventually, depend on demonstrative identifications based on the perception of actual material bodies (e.g., 1959: p. 21-22). Descriptive identifications that succeed in picking up a real individual function as "logically individuating descriptions" (1959: p. 26).

Strawson (1959) argues that the descriptive relations between particulars are identified in the context of our *universal spatiotemporal scheme*, which he describes as "the scheme of a single, unified spatiotemporal system" (1959: p. 31; see also p. 22-25). For example, our ability to think of Richard III of England depends on thinking of him as the person whose reign occurred at a particular place in this spatiotemporal system (see section 4.5). I can direct a thought at Richard III by linking him to the event of his ascension to the throne in 1483, which is a unique position in our spatiotemporal system. To Strawson, it would be incoherent for us to be sceptical about the procedures we use to confirm descriptive identifications within our spatiotemporal scheme while are still thinking in terms of that spatiotemporal framework itself (e.g., 1959: p. 27-30).

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[5] Demonstrative identification – also known as *deictic reference* and *deixis* – has attracted much interest in philosophical, linguistic, and psychological research. Like Strawson (1959), many scholars argue that demonstrative identifications operate as the basic means by which a human mind connects to the world. For more recent enquiries into demonstrative identification, see, for example, Evans (1982), Campbell (2002), and Bullot (2011).

As time goes by, material bodies change and we move within the spatiotemporal system. The internal parts of, and the external relations between material bodies change. To keep track of these changes, we need to be able to update our knowledge of the relations within and between spatiotemporal bodies. Because we need to update these relations, Strawson argues that we need to be able to re-identify objects and also places encountered at different times. This thought leads to one of Strawson's contributions to the analysis of our identification practices, which is to distinguish "referential, or speaker-hearer, identification" (i.e., identifying reference) from "reidentification" (p. 31).

An act of *reidentification* in Strawson's (1959) sense occurs when a thinker is able to keep track of a particular entity over time and history, and exert an ability to distinguish that particular entity from other entities. In his own words:

> (…) we must have criteria or methods of identifying a particular encountered on one occasion, or described in respect of one occasion, as *the same individual as* a particular encountered on another occasion, or described in respect of another occasion. (1959: p. 31)

On Strawson's account, we need the ability to re-identify particulars over time because our thinking about particulars operates by locating and tracking the relations between bodies with respect to a unified spatiotemporal system.

Strawson also deploys this analysis of identification in regard to the identification of persons, which I discuss and ultimately reject in section 7.2. Strawson argues that when a thinker refers to herself, she refers to an entity that has two aspects, the physical and the mental. According this dual-aspect theory, a person is neither a purely physical entity nor a purely mental entity, she is an entity with two aspects: both bodily and mental aspects.

The problematic a priori *universalism of Strawson's analysis of historical thinking*

Strawson (1966) rejects the transcendental idealism that he reads in Immanuel Kant's *Critique of Pure Reason* (1781-1787/1998). However, Strawson's (1959) "descriptive metaphysics" owes much to Kant's transcendental method understood as an *a priori* analysis of the conditions and universal structures of certain sorts of cognition (Strawson, 1959, 1966). This universalism is manifest in Strawson's (1959) search for a general description of the

conceptual scheme and judgments that he thinks operate as necessary conditions of all our identification practices. In Strawson's account, all human learners – irrespective of the learners' age, gender, and history of cultural learning (characteristics that Strawson might deem historically contingent) – must be users of the universal scheme he posits. Strawson's (1959) universalism is in line with intuition-based methods common in analytic semantics and metaphysics (Kripke, 1980; T. Nagel, 1986; Noonan, 1989/2003; Parfit, 1984; Shoemaker, 1984; Wiggins, 1980). Specifically, Strawson's method focuses on intuitive evidence and arguments derived from thought experiments and counterfactual scenarios. There are reasons that justify being sceptical about Strawson's universalistic method.

One important reason is that research by cognitive scientists (Gilovich, Griffin, & Kahneman, 2002; Kahneman, 2011; Tversky & Kahneman, 1974), philosophers of science (Wimsatt, 2007), and experimental philosophers (Knobe & Nichols, 2008; Machery, Mallon, Nichols, & Stich, 2004) has demonstrated that intuitions are often biased and misleading. In particular, compelling intuitions about the universality of certain cognitive traits have been falsified by a number of empirical enquiries (Henrich, Heine, & Norenzayan, 2010). Thus, Strawson's (1959; 1966: p. 15) stance that empirical and scientific research is of little relevance to metaphysics is difficult to defend because scientific enquiry has challenged the methodological foundation of his metaphysics. Similarly, philosophers who adopt Strawson's disregard for empirical research on the sciences and techniques of identification (either by philosophers of science or researchers from the cognitive and social sciences) have to defend a difficult methodological position.

Another reason to be dissatisfied with Strawson's universalistic method is the way its account for contingent *historical* phenomena and mechanisms. Strawson's work defends ingenuous contextualistic hypotheses about the context-specificity of reference (Strawson, 1950) and the spatiotemporal – and, thus, historical – character of human thinking (Strawson, 1959). Indirectly, he therefore emphasises the historical character of human thought by exhibiting the dependence of identification and person identification on practices aimed at keeping track of individuals over time and space. However, Strawson's account of the historicality of human thought is muted by his *a priori* method of enquiry that expels

empirical research from the metaphysical enterprise. Because it omits engaging with the detail of empirical and historiographical research, Strawson's *a priori* method screens out important questions about social identification and the role of identification in mechanistic control. His *a priori* method might therefore have encouraged, or at least did not curtail *disunity* in the scholarship on identification and person identification. Three of Strawson's omissions are particularly significant.

The omission of the effects of cultural and scientific practices on identification

A first limiting consequence of Strawson's (1959) *a priori* universalism is that it screens out important questions about social and cultural dimensions of identification practices. Because the aim of Strawson's descriptive metaphysics is to describe the most abstract and general characteristics of our universal scheme, his analysis does not engage a wide range of identification phenomena that occur only within the spatiotemporal boundaries of a restricted set of historical and cultural contexts.

An example of a topic that is screened out by the universalism adopted by Strawson and his followers is the impact of cultural and scientific practices on identification in general and person identification in particular (see, e.g., chapters 7 and 8). Strawson and his followers are not interested in explaining changes of identification practices induced by the cultural dissemination of scientific and technical skills in localised historical contexts. For example, Strawson's (1959) descriptive metaphysics of identification does not investigate the techniques of latent fingerprints analysis (S. A. Cole, 2001; Galton, 1892; Wilder & Wentworth, 1918), probably because his approach would classify these techniques as localised historical accidents whose study is beyond the scope and scale of a descriptive metaphysics.

This type of exclusion is questionable. By omitting the consideration of historically contingent but highly significant practices of identification, Strawson's model can only provide a limited or biased explanation of reidentification. For example, in chapter 2 and 7, I show that, since the end of the nineteenth century, forensic scientists introduced technical innovations for supporting the forensic identification of persons. Typically, these systems

preserve a descriptive record of a person's organism and enables the matching of this record with other descriptions which may be gathered at some future time (Bertillon, 1896: p. 11). The function of these systems is therefore to help human learners resolve the problems posed by what is referred to by Strawson and his followers as "reidentification". However, because they adopt an *a priori* universalism that excludes the examination of these systems, they fail to note the major historical and social significance of these identification and surveillance systems. It is in that sense that Strawson's account underestimates and misinterprets the historicality and context-specificity of core practices of identification.[6]

The omission of causal mechanisms in the ontology and epistemology of identification

A second limiting consequence of Strawson's (1959) *a priori* universalism is that Strawson's analysis does not include a thorough examination of the role of causality and mechanisms posited by scientific accounts in both the production and the reidentification of material individuals. For example, Strawson's ontology does not address the issue of whether or not specific causal mechanisms are necessary to the persistence of different kinds of individuals (see chapter 6). Moreover, with regard to epistemology, Strawson does not examine the role of causal and historical reasoning in enabling the tracking and identification of individuals (see chapter 4 and 6).

These omissions restrict the explanatory value of Strawson's account because, I argue in chapters 6-7, considerations of causal mechanisms and causal interventions are central to explaining both the persistence of material individuals – like persons – and our ability to track and identify the persistence of such individuals.

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[6] One way to perpetuate this neglect of the historicality of identification practices is to develop psychological version of Strawson's programme that adopts an individualistic approach. This programme is influential in philosophical psychology, and I assume that it is facilitated by the prominence of approaches combining universalism and individualism in psychology (see chapter 4). This programme may encourage researchers to make a dichotomy between *ahistorical* research into general identification and *historical* theories of contingent and context-specific identification. Such a dichotomy is spurious because a purely *ahistorical* and *atemporal* theory of identification would not have any empirical subject matter.

The omission of the practical and social dimensions of person identification and control

A third limiting consequence of Strawson's (1959) *a priori* universalism is that Strawson's account omits the investigation of the practical and social dimensions of person identification and control. For example, Strawson does not examine the role of person identification in moral attributions and social distributions (see section 1.1). Further, he omits the investigation of the relation between person identification and the categorisation of persons into social kinds (Hacking, 1986, 2007; Jenkins, 1996/2008; Tajfel, 1979; H. C. White, 2008).

Strawson's account of person identification, which I discuss in section 7.2, does not investigate the relations between identifying spatiotemporal individuals and exerting causal or social control over such individuals. Consequently, Strawson's *a priori* universalism screens out the linkage between the tracking and identification of individuals and the social control of persons. By contrast, the research on person identification by social scientists is often focused on the role of identification practices in social control and surveillance. In contrast to Strawson's lack of interest in these topics of social power, I will expound some of the basic connections between the tracking of persons and their control in chapters 7-9.

1.3   The disunity of the sciences of person identification and control

Since the publication of Strawson's *Individuals* (1959), scholars from different fields have developed multidisciplinary theories of and empirical investigations of identification and control. Philosophical theories of identification have produced accounts of identification that are more integrative than Strawson's descriptive metaphysics.[7] In the specific case of person identification, however, the project of developing integrative theories faces challenges posed by the disunity of the sciences investigating person identification.

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[7] See, for example, Campbell (1994, 2002), Eilan and collaborators (1995), Evans (1982), Millikan (1998, 2000), Meltzoff (2002).

The varied biological and cognitive sciences of person identification

In the biological and cognitive sciences, several fields have studied processes related to person identification and used related vocabularies. Specifically, in psychology and neuroscience, scientists use expressions related to identification, such as *person identification* (Clifford & Bull, 1978; Lucchelli & Spinnler, 2008) and *person identity* (Bruce & Young, 1986), in research investigating the mental mechanisms that enable *face recognition* (Bruce & Young, 1986), *person perception* (Bindemann, Avetisyan, & Rakow, 2012; González et al., 2011; Young & Bruce, 2011), *delusional misidentifications* (Ellis & Young, 1990; Langdon, Connaughton, & Coltheart, 2014), and *eyewitness identifications and misidentifications* (Clifford & Bull, 1978; Lampinen et al., 2012; Loftus, 1979/1996; Thomson, 1981, 1995; Thomson, Robertson, & Vogt, 1982). These research works sometimes integrate findings about human social cognition with research on individual recognition in non-human animals (e.g., Tibbetts & Dale, 2007).

In the cognitive sciences, several fields relevant to the theory of person identification tend to avoid using the vocabularies of "person identification" and "person identity." A clear example in that category includes investigations of the capacity for understanding mental states of the self and other minds, referred to as *mindreading* (Goldman, 2006; Nichols & Stich, 2003), *mentalizing* (Frith & Frith, 2006), or *theory of mind* (Apperly, 2011; Baron-Cohen, Leslie, & Frith, 1985; Bloom & German, 2000). As I will show in chapters 7, mindreading is critical to the form of person identification that aims to mental agent over time (see mentality-based tracking in section 7.3).

In addition to theories of mindreading, other fields currently occupy a position of undeclared relevance to the theory of person identification and control. In chapters 6-7, I will argue that the science of person identification can benefit from research on the role of heuristics in decision-making (G. Gigerenzer, Hertwig, & Pachur, 2011; Kahneman, Slovic, & Tversky, 1982; Wimsatt, 2006) and the use of mental models in reasoning (Johnson-Laird, 1983; Kintsch, 2004; Zwaan & Radvansky, 1998).

The social sciences of person identification and control

In the social sciences and the historical humanities, researchers from different disciplines have used expressions such as *personal identification* (Wilder & Wentworth, 1918), *identification* (Groebner, 2004/2007; Jenkins, 1996/2008), *citizen identification* (Lyon, 2009), and *social identity* (Jenkins, 1996/2008; H. C. White, 2008) in research aimed at investigating the practices of person identification, social control, and surveillance. Although the aims, methods, and conclusions of these works are exceedingly varied, the authors of these works tend to share core assumptions that are typically absent from universalistic philosophies of identification (e.g., Strawson, 1959; see above) and ahistorical theories of identification in the cognitive sciences (e.g., Bruce & Young, 1986; see chapter 4).

One assumption common in the social sciences is the idea that the practices of person identification and control have changed in the course of human history, and therefore present an irreducible *historicality* (Caplan & Torpey, 2001; Foucault, 1975/1977; Groebner, 2004/2007; Lyon, 1994). This thought is germane to the idea that the behaviours and actions aimed at identifying and controlling persons present characteristics that are specific to particular cultural contexts, thus irreducibly *context-specific*. This emphasis on the historicality of person identification and control is evidenced by both the topics and methods elected by social scientists and historians. The topics and scope of social scientific studies typically focus on practices and cultural innovations that are distinctive of particular historical and cultural contexts.

Historiographical research, including the works by Natalie Zemon Davis (1983, 1988) and Valentin Groebner (2004/2007), has analysed practices of person identification that occurred in early modern Europe and the late Middle Ages. Groebner focused on the description of how individuals have been recorded in order to facilitate their identification (Groebner, 2004/2007: p. 225). It cannot be disputed that the material means used to record persons' identities have changed since the late Middle Ages. For example, Groebner (2004/2007) describes how early modern identification relied on the use of context-specific analysis of a cluster of signs and insignia, which included items such as coats of arms, the seal

of an authority, stamps, a scribe's colophon, a clerk's signature, and other paper certificates thought to represent a person.

In the twenty-first century, I cannot hope to prove my identity to a police officer by presenting my seal and coats of arms; I can, at best, hope to make a contextualistic joke about the historicality and context-specificity of the material means by means of which human societies record personal individuality.

Other programmes in the social sciences investigating the historicality of identification practices have endeavoured to understand the roles of *modern* administrations and states in the development of novel practices of person identification and social control (Caplan & Torpey, 2001; Lyon, 2009; Torpey, 2000). For example, these works have shown that the role of institutional authorities in the validation of identification documents has become pervasive in modern times. In a modern state, the legal acts of issuing identification documents tend to be the monopoly of policing and governmental administrations. As discussed in section 1.1 and chapter 7, modern administrations and states use identification practices to organise social distribution and control.

In their enquiries into the historicality of identification practices, social scientists have offered investigations into the *cultural innovations* that scientists and state officers produced to assist the identification and control of persons. Techniques of high import were invented by the end of the nineteenth century (S. A. Cole, 2001). These inventions include the system for "anthropometric identification" (see chapter 2) proposed by Alphonse Bertillon (1883, 1885, 1890, 1896) and the systems for collecting and analysing latent fingerprints defended by Francis Galton (1892) and others (Wilder & Wentworth, 1918). Other consequential identification techniques, such as the issuing of passports by an authority (Torpey, 2000) or the analysis of distinctive signs and clues (Ginzburg, 1979; Locard, 1931-1935), have undergone both cumulative and non-cumulative changes since the high Middle Ages (Groebner, 2004/2007). Social scientists are contributing to our understanding of contemporary identification techniques too, and in particular those using of computing technologies (see chapter 7). For example, the distinctive characteristics of identification

practices aided by computer technologies are analysed in the debates on social surveillance (Ball, Haggerty, & Lyon, 2012; Chesterman, 2011; Lyon, 1994, 2009; Marx, 2006) and the challenges to privacy rights in the information age (Nissenbaum, 2004, 2010; Solove, 2004, 2007).

The problematic vocabularies of identity

As I argue the chapters that follow, the different traditions of scholarship on person identification and control tend to remain thematically specialised and methodologically compartmentalised. Authors from fields in the biological and cognitive sciences (e.g., the psychology and neuroscience of face recognition) rarely integrate their findings with enquiries conducted in philosophy and social sciences (e.g., the ontology and personal persistence, the sociology of social surveillance). Because this disunity obscures the significance and coherence of the topic of person identification and control, it is be important to understand the factors that have led to this disunity. Although there are many more factors of disunity that I can presently analyse, some core factors are particularly salient.

A core factor of disunity derives from the inconsistencies of heterogeneous vocabularies of identity. There is considerable lack of agreement with respect to the interpretations of the vocabularies used to describe persons and identity, which include a variety of concepts associated with the terms *identity*, *personal identity*, *social identity*, and *identification*. The term "identity," for example, is often used in ambiguous and disputed ways.

Some researchers in psychology and neuroscience have used the vocabulary of personal identity without providing any explicit ontological clarifications with respect to what they mean by a person's "identity" (see chapter 4). Although sometimes innocuous, this casual attitude can become problematic if the term "identity" is supposed to play an important theoretical role.

In contrast to works that do not clarify the vocabulary of identity, other works begin with a logical conception of identity. Philosophers adopting a transcendental or *a priori* method of conceptual enquiry, such as Strawson (1959) and Shoemaker (1984), typically begin their discussions of personal identity and reidentification with an introduction of the concept of

numerical identity or *numerical sameness*.[8] This concept derives from the logical understanding of identity.

Logicians characterise identity as an "equivalence relation." An equivalence relation is a relation *R* that is transitive,[9] symmetrical,[10] and reflexive.[11] Identity as an equivalence relation conforms to Leibniz's Law (the principle of the indiscernibility of identicals), which states that if object *A* is identical to object *B*, then whatever is true of *A* is true of *B*, and conversely. Strawson (1959) and Shoemaker (1984) distinguish the concept of numerical identity from the concept of qualitative identity or qualitative sameness (e.g., the relation between two twins, who are looking "exactly alike" while persisting as two numerically distinct individuals).

Other scholars doubt that the logical conception of identity can be of real theoretical use to clarify personal persistence and person identification (DeGrazia, 2005; McMahan, 2002; Merricks, 1998; Schechtman, 1996). One risk of the appeal to numerical identity is that this concept may encourage essentialist interpretations of personal persistence. This can be a source of controversies or misunderstanding because this type of essentialism is criticised by many accounts in philosophy of science, biology, and social sciences. In chapter 6, I will reject the view that there exists an essence of a human person that can be captured in terms of numerical identity.

In a development separate from the philosophy of identification, the use of the vocabulary of identity has become pervasive in the social sciences to refer to the persistence of human individuals and social persons. However, in the social sciences, the vocabulary of identity tends to belong to theories of *cultural identity* and *social identity* (Jenkins, 1996/2008; H. C. White, 2008). These accounts engage with topics that are distinct from the problems of reidentification and numerical identity. Often, in these social scientific contexts, "identity" is

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[8] See Shoemaker (1984).

[9] "Transitive" means that if object *A* has relation *R* to object *B*, and *B* has relation *R* to object *C*, then *A* has relation *R* to *C*.

[10] "Symmetrical" means that if *A* has relation *R* to *B*, then *B* has relation *R* to *A*.

[11] "Reflexive" means that everything has the relation to itself.

used to refer to the association of an individual with a particular social network or cultural group, and with a set of collective features that the individual either express or would like to represent. Social scientific theories tend to adopt constructionist accounts of social entities (Hacking, 1999), and this constructionism can conflict with the naturalistic ontologies and causal models defended by philosophers of science and cognitive scientists (see chapter 5). In these debates about social identity, some theories in social sciences and philosophy use the vocabulary of identity to refer to a person's subjective self-description, that is, to the "narrative identity" of the self. Other accounts in the social sciences use "identity" to refer to a person's distinguishing marks and classification. Notably, these different uses of the term "identity" can converge or be confused in common academic usage.

The antagonisms between mechanistic and contextualistic approaches

A second core factor of disunity is part of the so-called debate about the "two cultures" (Bullot & Reber, 2013a; Slingerland & Collard, 2011; Snow, 1959), which refers to antagonisms dividing the aims and methods from modern science and the humanities. In the chapters that follow, I focus on a problem related to the "two cultures" debate: the ostensible antagonism between (i) the mechanistic and universalistic accounts of identification in the biological and cognitive sciences, and (ii) the contextualistic theories of identification in the social sciences and the humanities. One manifestation of this tension is the difficulty in finding explanations of identification phenomena that can jointly satisfy the mechanistic and contextualistic aims.

The first aim can be expressed as follows:

> *The mechanistic – or reductionistic[12] – aim*: A science of person identification aims to provide testable reductionistic hypotheses about universal mechanisms or laws enabling stable behaviours and practices of person identification and control. Such hypotheses might justify positing human universals.

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[12] For the sake of brevity, and only in this introduction, I treat the adjectives "mechanistic" and "reductionistic" as mutually substitutable. However, I offer a more nuanced account of the varieties of scientific reductionism in chapter 3.

As discussed further in chapters 4 and 8, prominent reductionistic models in the biological, psychological, and cognitive sciences of human identification and social learning are *mechanistic* and *universalistic* in the sense that they prioritise the mechanistic aim. These models focus on the task of formulating mechanistic explanations.

To explain a phenomenon, a *mechanistic explanation* aims to describe the mechanism that produces the phenomenon (Bechtel, 2008; Bechtel & Richardson, 1993/2010; Craver & Bechtel, 2006; Wimsatt, 1976). In the tradition of philosophy of science I follow, a *mechanism* is a causal system that can be specified by functional, componential, and organisational characteristics. First, a mechanism performs *functions*, causal processes, or activities. As a working system, it is defined by the functions or causal activities it performs. For example, the brain mechanism that enables the capacity for face recognition is defined by the fact that is has the function to recognise faces (see chapter 4). The functions or tasks performed by a mechanism (e.g., recognising faces) are the phenomena explained by the working of the mechanism.

Second, a mechanism has *components*, or working parts. To those whose formulate a mechanistic explanation, the parts of a mechanism are typically the components that are relevant to the phenomenon explained by the mechanism. The parts are relevant to the phenomenon by virtue of certain of their properties. The components of a mechanism act and interact causally with one another. If they did not, they would not perform the functions or activities distinctive of the mechanism.

Third, the components of a mechanism and their causal relations are *organised spatially and temporally* (Bechtel & Richardson, 1993/2010). The spatial and temporal relations play a role in the causal production of the phenomenon explained by the mechanism. To characterise the organisation of a mechanism, an enquirer need to describe properties such as the relative locations, boundaries, shapes, sizes, orientations, and connections of the mechanism's components. For example, as discussed in chapter 4, mechanistic explanations of face recognition attempt to describe the spatial and temporal relations between components of face

recognition mechanisms (e.g., Person Identity Nodes (Bruce & Young, 1986) and the Fusiform Face Area (Kanwisher, McDermott, & Chun, 1997)).

To explain behavioural and cultural phenomena, some mechanistic theories are ahistorical in the sense that they refer to mechanisms (or laws) without describing the historical and cultural context of the mechanism they posit. Mechanisms that are often cited in such ahistorical mechanistic explanations include genes and cognitive modules. For example, some evolutionary psychologists have argued that human development results from the environmental triggering of developmental programmes and cognitive modules coded by genes (Barkow, Cosmides, & Tooby, 1992; Sperber & Hirschfeld, 2004), which are posited as components of the *universal* architecture of the human mind (D. E. Brown, 1999; Pinker, 2002). In line with this approach, several cognitive scientists have hypothesised the existence of cognitive modules for tracking persons and agents (Baron-Cohen, 1995; Leslie, 1995; Premack, 1990).

Mechanistic models can develop at the expense of the contextualistic aim for a science of person identification, which may be expressed as follows:

> *The contextualistic aim*: A science of person identification aims to account for the historical variability and context-specificity of the behaviours and practices of person identification and control.

In contrast to ahistorical mechanistic models, prominent contextualistic models in both the social sciences and philosophy focus on the contextualised or "thick" descriptions of cultural practices of identification. Contextualistic works tend to view each type of identification practice as distinctive of, and unique to a particular historical sociocultural context. Typically, advocates of the contextualistic approach prioritise the contextualistic aim at the expense of the mechanistic aim.

Contextualistic theories study cultural phenomena as they occur in unique historical contexts, using methods aimed at describing historical variants of cultural behaviours and

their context-sensitivity. To use a pair of concepts introduced by Windelband (1894/1998),[13] contextualists opt for methods that are *idiographic* (aimed at describing phenomena that are contingent and unique, such as historical events) rather than *nomothetic* (aimed at formulating laws to describe universals).

Philosophers interested in person identification and control have practiced different sorts of contextualism. Some works expound the historicality of identification practices and concepts. Often in relation to debates about relativism (Hacking, 1995b, 1999; Unger, 2002), these contextualists have investigated the history of normative conceptions of person kinds (Hacking, 1986, 2007), the history of conceptions of the self (Taylor, 1989), the history of medical and psychiatric categorisations (Hacking, 1995a), and the history of modern social control (Foucault, 1975/1977).

Other works propose contextualistic principles as heuristics for resolving practical problems without articulating historical narratives. For example, normative accounts in political philosophy (Christman, 2009; Walzer, 1983, 1994), ethics (Singer, 1979; B. Williams, 1985/2006), and bioethics (Faden & Beauchamp, 1986; Tonelli & Misak, 2010; Weijer, Skelton, & Brennan, 2013) have employed contextualistic heuristics for analysing the historical contexts in which such practical dilemmas occur and for offering practical solutions to these dilemmas. These works deny the fecundity of *a priori* theorisations based on "thin" concepts and transcendental analyses (see chapter 5).

1.4   Philosophy and heuristics of psychohistorical enquiry

In chapters 3-5, I argue that the scholarship on identification and person identification tends to prioritise either the mechanistic aim or the contextualistic aim. That is to say, scholars rarely seek to achieve both aims; and I will argue that this tension to be a potent factor of disunity. However, I argue that the integration of mechanistic and contextualistic strategies is a task of

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[13] For debates on the importance of idiographic methods in psychology, see Cone (1986), Pelham and Pelham (1993), Lamiell (1998), Mos (1998), Thomae (1999), Barlow and Nock (2009), Robinson (2011).

great theoretical and practical importance. Specifically, I propose psychohistorical heuristics can help us overcome the antagonism between a number of mechanistic and the contextualistic approaches.

The psychohistorical strategy (broad construal)

The approach I propose derives from the realisation that the problematic relations between mechanistic reductionism and contextualistic methods result in detrimental consequences for both theoretical traditions. Evidence that supports this idea is presented in chapters 4-6, which expand the accounts I defended in my previous research on person identification[14] and artistic practices.[15] Beyond these two fields, it is possible to find evidence of the detrimental consequences of the antagonism in many other fields because the tension between reductionistic and contextualistic methods in pervasive in most fields investigating cultural practices (e.g., research into religious practices, the nature of disease and mental disorder, scientific reasoning, and the mechanisms of cultural change).

If most research fields investigating cultural phenomena are faced with the ostensible antagonism between reductionistic-mechanistic and contextualistic approaches, this fact raises an important question, which might be formulated as follows:

> The reductionism-contextualism integration question: is it possible to develop a multidisciplinary theory of a cultural phenomenon P that combines insights from both mechanistic (reductionistic, universalistic) analyses of P and its component parts and processes with contextualistic interpretations of P?

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[14] See, for example, Bullot (2014a), Rich and Bullot (2014), Bullot (2015). Although the proposals made by Bullot and Rysiew (2007) and Bullot (2009b) are forebears of the critique I develop in chapter 4-6, these articles do not engage with the problem of the antagonism between mechanistic and contextualistic heuristics.

[15] See Bullot (2009a), Bullot and Reber (2013a, 2013b), Bullot (2014b, 2014c).

In several of the enquiries that have prepared the present proposal,[16] I have suggested different types of arguments to support the thesis that there is no *a priori* incompatibility between mechanistic and contextualistic explanation. In these works, I have used the expressions *psycho-historical programme* (Bullot & Reber, 2013b), *causal-historical theory* (Bullot, 2014a), and *psycho-historical theory* (Bullot, 2014b, 2014c, 2014d, 2015) to refer to a type of heuristic method – or theory – aimed at integrating mechanistic reductionism and contextualism. This usage corresponds to what I will term in chapter 6 the *broad sense* of the term "psychohistorical"[17].[18]

I have avoided using other compound terms that might have been used as alternatives to "psychohistorical," such as "mechanistic-contextualistic" or "reductionistic contextualism," because these terms are cumbersome.

I also use the term "psychohistorical" in a *narrow sense* to refer to *particular* attempts to build medium-scales models and theories articulating mechanistic and contextualistic methods, such as the psychohistorical theory of identification defended in chapters 6-9.

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[16] My first attempts at developing a psychohistorical method of enquiry aimed at integrating mechanistic and contextualistic insights can be found in Bullot (2009a), Bullot and Reber (2013a, 2013b), and Bullot (2014b, 2014c). My first sketch of a psychohistorical theory of person and agent identification can be found in Bullot (2015), and number of associated criticisms and hypotheses are discussed in Bullot (2014a) and Rich and Bullot (2014).

[17] In the sake of brevity and style, I will not hyphenate the term "psychohistorical" in the present volume (although I used to hyphenate the term in my previous works).

[18] From a terminological standpoint, I should warn the reader that we need to distinguish the broad epistemological understanding of "psychohistorical" I just defined (i.e., integrating mechanistic and contextualistic approaches) from historical methods defended by advocates of the so-called "Wellfleet" school of *psychohistory* in the historiography of the 1960s and 1970s (Lifton & Olson, 1974), which is discussed in the writings of Robert Jay Lifton (1970, 1986). The approach defended by advocates of this form of psychohistory does not aim to integrate historical enquiry with mechanistic models from the biological and cognitive sciences, and are instead inclined to focus on linking history with psychoanalytic psychology (Crosby & Crosby, 1981; Kohut, 1986; Pietikainen & Ihanus, 2003; Saffady, 1974; Stannard, 1980).

While investigating person identification and cultural practices, I have tried to identify the works that are psychohistorical in the broad sense of combining mechanistic and contextualistic approaches. I will discuss a number of such works in the chapters that follow.

Some scholars involved in the conflict-prone debate about the "two cultures," who fought for either "rigorous" mechanistic explanation or contextualistic analysis grounded in "thick" cultural meanings, may respond to appeals for integration – such as mine – with scepticism. Some scholars have already communicated their scepticism about the psychohistorical approach in their writings (Graham, 2013; Juslin, 2013; Thompson & Antliff, 2013). In the present work, I will attempt to rebut this scepticism and demonstrate that psychohistorical strategies (in the broad sense) provide scholars with a more sensible strategy than the *status quo* based on the mutual ignorance and hostility between reductionists and contextualists.

Novelty of the psychohistorical theory of person identification and control (narrow construal)

The aim of the present work is to propose a new psychohistorical theory of person identification and control. The new theory comprises a number of conceptual and theoretical tools that were absent from my previous works. It is a philosophical theory that can engage with a variety of topics and questions, ranging from questions about identification mechanisms to questions about person identification and control in cultural phenomena. To pursue this aim, I engage with some of the core theoretical tensions between mechanistic reductionism and contextualism. In particular, I examine the issue of how mechanistic and contextualistic explanations can be brought together to provide a complete integrative theory of person identification and control.

1.5   Outline of the investigation and the psychohistorical theory

In *chapters 2 to 5* I present an analysis of the topics and arguments that motivate my critique of previous accounts of person identification; in *chapters 6 to 9*, I present a new psychohistorical framework for understanding person identification and control.

Throughout my investigation, I use the expression *person identification* broadly to refer to cognitive skills, behaviours, and cultural practices that enable the tracking, classification, and

control of human individuals and groups. I offer a new theoretical specification of "person identification" in chapter 6, where I explain person identification in terms of tracking mechanisms.

I use *sciences of person identification (and control[19])* to refer to the set of separate research works attempting to explain the phenomena of person identification and control. The plural form emphasises the current diversity and disunity of the sciences of person identification and control. When I use the singular form, the science of person identification, I refer to the ideal of a more unified and integrative theory of person identification.

Explanations of person identification often analyse *functional roles* that individual agents or groups can occupy while performing tasks of identification and control. Throughout the investigation, I use the term *learner* – in skills of person identification and control – to refer to an agent who is in the process of acquiring (learning) information and skills relevant to tracking, identifying, or controlling persons and social groups. I will sometimes use terms that refer to specific kinds of learners, such as *tracker* (a learner performing a task of tracking), *enquirer* (a learner conducting an enquiry about a target), and *manipulator* (a learner performing an intervention aimed at manipulating a target). Following other works (e.g., Ball et al., 2012; Bombari, Schmid Mast, Brosch, & Sander, 2013; Cummins, 1996; Ekman, 1996; Kenny, 1994), I use the term *target* to refer to the *entity aimed at* by a learner's identification act or behaviour.

My enquiry begins with the exposition in *chapter 2* of a series of intriguing phenomena of person identification and control. These phenomena include puzzles related to the experience of recognising somebody's face, misidentifying look-alikes in forensic contexts, and struggling to identify impostors. These are phenomena that a science of person identification should explain (i.e., these phenomena can be considered as *explananda* of a science of person

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[19] Because I assume that a science of person identification should be a science of person identification *and control* (see chapters 7-9), my use of the expression *sciences of person identification* should be understood as shorthand for the expression *sciences of person identification and control*.

identification). The phenomena offer an opportunity for us to ponder over the difficulty of the basic questions and aims of a science of person identification and control. In particular, they raise the *explananda* question: what are the core phenomena (*explananda*) that need to be explained by an integrative theory of the person identification?

It is sometimes believed that person identification is epitomised by the rapid recognition of a familiar face (Bruce & Young, 1986; Clifford & Bull, 1978). However, this view is too crude. Converging evidence demonstrates that person-identification phenomena include decision-making processes that are distinct from perceptual recognition, socially *complex* and implicate decisions and judgements made *under uncertainty*. From a historical and philosophy of science perspective, this complexity of person identification raises both descriptive and normative questions. With respect to historical accuracy, how should we describe the practices and methods that scientists use to tackle the complexity of person identification? With respect to normative adequacy, what are the best ways for researchers to address the problems posed by the complexity person-identification phenomena?

To address these questions in *chapters 3 to 5* (and also in other chapters), I defend the hypothesis that, like other decision-makers facing complexity, researchers from the biological, cognitive, and social sciences of identification have recourse to a variety of heuristics. *Heuristics* are rules and patterns of action that have the function to facilitate learners' decision-making. The heuristics used in both identification practices and scientific explanations of identification, like any other heuristics, can generate an intricate mesh of explanatory insights, methodological biases, and conflicts. In *chapter 3*, I argue that researchers use both *first-order heuristics* (i.e., simple or cost-effective decision-making procedures) and second-order heuristic or strategies for assessing first-order heuristics (i.e., *meta-heuristics*).

Philosophers of science and cognitive scientists have proposed models that can help us understand how first and second-order heuristics have guided the history of scientific practices. Much of this research has focused on the practice of mechanistic reduction in the biological sciences. In chapter 3, I distinguish different sorts of reductionism. Specifically, I

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expound and defend the hypothesis that researchers have to use *reductionistic heuristics* to address the problem of the explanation of complex phenomena. Philosophers of science have examined the use of reductionistic heuristics in the biological sciences (Bechtel & Richardson, 1993/2010; Wimsatt, 1980, 2006). However, to my knowledge, they have not investigated the use of reductionistic heuristics in the cognitive and social sciences of person identification. Likewise, cognitive scientists have not developed the theory of heuristics to account for judgements of person identification. I argue that two core contributions from the theory of reductionistic heuristics provide important insights for guiding the descriptive and normative study of the sciences of person identification.

First, the history and epistemology of explanation by means of reductionistic heuristics provide a *conceptual framework* for understanding how heuristic strategies can contribute to developing successful explanations of person-identification phenomena. This framework is a productive way to describe and understand how researchers mitigate the challenges posed by the complexity of person-identification phenomena. For example, this framework predicts that when researchers adopt mechanistic heuristics (associated with inter-level mechanistic reduction), such heuristics prioritise a series of basic identification and localisation questions that can productively guide theoretical and empirical enquiry.

Second, heuristic-based models of scientific explanation make the important prediction that, like any other heuristics, reductionistic heuristics in science can be systematically biased (Wimsatt, 2006). This prediction is, I argue, helpful to understand how specific reductionistic heuristics have led research programmes on person identification to foster biased and controversial explanations. Understanding the origin of these biases and controversies can help us understand some of the factors that lead to the current disunity of the sciences of person identification and control.

In *chapters 4 and 5*, I defend both the descriptive adequacy and the normative relevance of heuristic-based models in a critique of several prominent research programmes in the sciences of person identification. The heuristic-based approach is instrumental to assessing the virtues and biases of decision-making in research. For example, the theory of

reductionistic heuristics in the history of scientific practice predicts that the use of a heuristic can bias the researcher's reasoning, leading to omissions in explanation or erroneous conclusions. There is evidence supporting this prediction in several corpuses of research conducted on person identification, including in the reductionistic theories of person identification developed in the biological and cognitive sciences (chapter 4) and the contextualistic theories of person identification developed in the social sciences and the humanities (chapter 5).

To demonstrate the role of reductionistic heuristics in shaping scientific research on person identification, I assess a sample of biological and psychological research on person identification. In *chapter 4*, I argue that prominent reductionistic models of the face-recognition programme are biased by the meta-heuristics of theoretical individualism and universalism. Specifically, I propose several arguments showing that systematic biases or limitations have led researchers from the face-recognition programme to omit the study of core phenomena of person identification. For example, individualistic theories that prioritise the study of perceptual recognition of faces (or organisms) are incomplete because they do not account for important identification phenomena such as the capacity to identify unobservable persons or agents concealing their identities. Overall, the biases induced by individualistic theories include, among other limitations, the omissions of discriminative identification, causal-historical reasoning for person identification, culturally inherited and cooperative identification of persons, and the historical ontology and social epistemology of person identification. Therefore, although the face-recognition programme is highly productive as a scientific paradigm in the cognitive sciences, it does not provide a complete account of person identification and control. In sum, there is much more to human person identification than behaviours merely driven by perceptual recognition.

In *chapter 5*, I shift the focus of my analysis to debates about contextualistic and historical accounts of person identification. These accounts are sometimes self-proclaimed anti-reductionistic works (this contention can be disputed because contextualistic models can be reductionistic and biased). First, I demonstrate that a wide range of enquiries into human behaviour and person identification – in both the social sciences and the humanities – have

been guided by *contextualistic heuristics*. For example, contextualistic methods are central to studies investigating particular cases of person identification and misidentification, techniques that scaffold identification practices, and cultural variations in the conceptions of selves and personal persistence. Second, I show that advocates of logical, mechanistic, and reductionistic research strategies have offered commanding criticisms of biases and fallacies that occur in contextualistic strategies of research. For example, an important challenge to contextualism asserts that contextualistic interpretations often fail to provide integrative causal models consistent with scientific models. A second objection is based on the idea that many contextualistic methods and heuristics are conducive to biases and fallacies.

The problems and objections discussed in chapters 4 and 5 are evidence of antagonisms between mechanistic and contextualistic traditions, which can result in lack of cooperation or fruitless controversies. A gap exists between the majority of mechanistic accounts of person identification, which are typically guided by reductionistic heuristics, and contextualistic accounts of person identification practices (both normative and non-normative). Because there is much to be regretted in that state of affairs, I present in chapter 5 several arguments in defence of the critical use of contextualistic heuristics. In particular, I argue that mechanistic and contextualistic heuristics can be viewed as complementary resources for developing critical enquiries. To continue this line of reasoning, I devote chapters 6 to 9 to the defence of a psychohistorical theory of person identification that attempts to overcome some of the antagonisms between reductionistic and contextualistic theories.

In *chapter 6*, I offer a blueprint for developing a psychohistorical theory of person identification and control. The chapter presents the building blocks of a theory that can overcome some of the antagonisms between mechanistic and contextualistic accounts. This chapter explains the sense in which I use the qualifier "psychohistorical" in the context of my theory of person identification. It also suggests a number of new core psychohistorical hypotheses, some of which are developed in greater detail in the next chapters. The motivation for the theory is to overcome the biases I have examined in both reductionistic model of person identification in the cognitive sciences (chapter 4) and contextualistic accounts of person-identification practices (chapter 5).

Crucial to avoiding these biases is the inclusion of an ontological model of person kinds (and their persistence or identity conditions) into the theory of identification. This move aims to remediate omissions of ontological questions by mechanistic models in individualistic psychology (examined in chapter 4). Thus, the theory I propose combines (i) an *ontological model of persons* or person kinds with (ii) an account of how learners use *person-tracking mechanisms* to become sensitive to the ontic characteristics of particular persons and person kinds (as defined in the ontological model).

The psychohistorical account I defend rejects philosophical views that are *essentialist* in the sense that they posit a unique kind or essence of the human person. Instead of assuming a single essence of the human person, I defend a psychohistorical ontology based on the need to distinguish at least four kinds of human person. The *kinds* of human *person* I distinguish include the person understood as (i) a living human *organism*, (ii) a human *psychological agent*, (iii) a human *intentional agent*, or (iv) a human *social or legal agent*. Using contextualistic evidence, I show that these different kinds of person have different causal and historical characteristics.

An implication of this account of person kinds is that many human individuals belong to several person kinds simultaneously. For example, it is likely that you – the reader – are concurrently a living human organism, a psychological person, an intentional agent, and a social or legal person. This is my ontic status too, I assume, at the time *t* of writing this text. However, if you were reading this text at time *t**, a time after I suffered from traumatic brain injury that left me unconscious in a vegetative state, the situation would be very different. At time *t**, I would still be a human organism; but I might no longer be a psychological and intentional agent. At time *t**, in some cultural contexts, I might still be a legal person in the sense of being a living organism entitled to specific legal and medical treatments (e.g., life support procedures).

In integrating hypotheses about the historicality of person kinds with psychological and epistemological heuristics regarding person identification, the psychohistorical theory generates novel hypotheses regarding the tracking mechanisms used to perform acts of person

identification. In particular, the theory makes a series of predictions regarding the differences between recognition-based, heuristic-based, explanation-based person tracking. For example, the theory predicts that important differences separate person identification carried out by means of perceptual recognition alone and identification carried out by means of heuristics and explanations. For example, explanation-based person tracking can more robustly track the causal history of the target than recognition-based tracking.

Another prediction made by this account, which I discuss in chapter 7, is that *person identification* is a set of complex phenomena that vary as a function of the kind of person being tracked and identified. Thus, it is not possible to articulate a universal and simple formulaic definition of either "identification" or "person identification." Specific identification concepts depend on the kinds of person or groups being tracked, and particular theories and models aimed at describing these relations.

To illustrate the fecundity of the psychohistorical framework, I demonstrate in *chapter 7* that the psychohistorical theory outlined in chapter 6 can be deployed to explain person control and social control. I use the expression *person control* to refer to the ability of a learner acting as a *controller* (or *manipulator*) to exert a causal and social influence on the behaviour of a target person. For example, a caregiver's task of protecting a fragile person with immature or compromised decision-making (e.g., a toddler, a patient with Alzheimer dementia) from surrounding dangers (e.g., poisonous materials, motor vehicles) requires that the caregiver tracks and controls key aspects of the child or patient's behaviour and her spatial relations to other objects.

Sometimes, in both common parlance and academic writings about privacy and political rights, the practice of controlling another person is assessed as a blameworthy attack on a person's autonomy. For example, the principles of respect of patient autonomy (Childress, 1990) and informed consent (Berg, Appelbaum, Lidz, & Parker, 2001; Faden & Beauchamp, 1986) in bioethics aim to undercut the risks of social abuse associated with taking medical control of a patient's life and manipulating that patient's decisions (e.g., "medical paternalism"). In the present work, however, I assume that the practices of person control are

not necessarily ethically wrong and abusive because beneficial social relations require subtle forms of person control and manipulations (e.g., contractual relations, mentor relationships). For example, to continue with the example of bioethics, it can be argued that medical forms of patient control that might contradict a patient's explicit requests can be ethically justified when the patient's autonomy is severely compromised (Conly, 2013; Misak, 2005; Tonelli & Misak, 2010). Thus, when I use "person control," it should be understood that I refer to acts that may be assessable either as right or wrong, depending on the moral and political norms being used to assess these acts.

In chapter 7, I examine the hypothesis that the tracking and identification of persons is either necessary to, or a facilitating condition of the control of persons. I refer to this idea as the hypothesis of *tracking for person control*. Using a mechanistic framework, I argue that the idea is supported by an *argument from control of person-making mechanisms*. The argument relies on two premises derived from the psychohistorical framework. The first refers to the fact that the tracking of a person provides the tracker with sensitivity to mechanisms that cause and scaffold the persistence and behaviour of a person (i.e., personal persistence mechanisms, or "person-making" mechanisms). The second premise is that a learner's sensitivity to a target person's persistence mechanisms facilitates robust causal interventions on that target's persistence mechanisms. To show the usefulness of the psychohistorical approach, I argue that the argument from mechanistic control can be strengthened by the use of contextualistic and historical evidence.

I suggest that the identification and control of persons may sometimes be carried out by means of domain-specific forms of tracking. In particular, I distinguish organisms-specific, mentality-specific, and sociality-specific tracking. The form of tracking that can most plausibly be conducted as domain-specific tracking is organism-specific tracking. The best evidence to support the argument from mechanistic control is, however, derived from examining the varieties of *integrative tracking* of persons, which results from processes that combine organism-specific, mentality-specific, and sociality-specific tracking. In particular, on the basis of historical and sociological evidence, I show that person control in both biomedical and governmental control is carried out by means of integrative tracking. Thus,

this analysis vindicates the psychohistorical approach by demonstrating that contextualistic evidence can enlighten a mechanistic argument.

In *chapter 8*, I shift the focus of my exposition to the cultural practices of person identification. This chapter provide reasons to support two core hypotheses that were assumed in previous chapters. First, I propose that *cultural learning* play a critical role in the development of the skills and social practices of person identification. Second, I defend the view that the psychohistorical framework can make a contribution to the study of cultural learning.

In an attempt to explore the benefits of developing a psychohistorical approach to cultural learning, I argue that, like in many other fields, the antagonism between mechanistic and contextualistic approaches to the study of cultural learning is unwarranted. Research on the mechanisms of cultural learning can help us account for the historical diversity of cultural phenomena and cultural learning. Moreover, models combining universalistic and contextualistic heuristics and discoveries suggest the need to assess novel empirical predictions and integrative hypotheses about cultural learning.

To provide a conceptual foundation for this position, I present a psychohistorical theory of cultural learning, and I illustrate how this theory can be employed to explain significant phenomena at the core of practices of person identification, person control, and cultural cognition. Furthermore, it should be possible to apply the psychohistorical theory of cultural learning to other domains of cultural enquiry, including psychohistorical models of culture and epistemological studies investigating the types of sensitivity that are distinctive of human agents' cultural knowledge and understanding.

In *chapter 9*, I use the psychohistorical framework doted with a model of cultural learning for investigating a vexing topic of the theory of person control: violent behaviours. Specifically, I examine honour related violence, such as so-called "honour killings," which raises a difficult puzzle for philosophical and moral psychology. How can one murder in cold blood one's loved one for honour? As an attempt to shed some light on this puzzle, I assess predictions made by prominent individualistic and nativist models of empathy. I argue that

some limitations of these models for explaining honour related violence originate from the fact that they do not take into account the impact of cultural learning and norms specific to particular historical contexts. To complement these models, I outline new psychohistorical hypotheses about moral decision-making and empathy modulation, which advance novel ideas – grounding in the psychohistorical framework – for explaining empathy modulation in violent behaviours.

2   The Complexity of Person Identification

In this chapter, I present a set of case studies and problems that illustrate the challenging complexity of person identification. The exposition of these cases and problems will serve as background of the analyses and theories investigated and proposed in subsequent chapters. Building upon philosophical insights from research on reasoning heuristics and scientific reductionism, which I introduce in chapter 3, I argue in chapters 4 and 5 that both reductionistic and contextualistic programmes of research on person identification are affected by biases and limitation. In chapters 6-9, I present a new psychohistorical framework for the theory of person identification and control, which attempts to overcome some of these biases and help resolve the antagonism between reductionistic and contextualistic approaches.

2.1   Phenomenology and the "face-recognition → person-identification" heuristic

Let us begin our analysis with a highly ordinary and clichéd example. Imagine that, while attending a social gathering, you see a man – the target of your identification attempt – whose demeanour and face strike you as those of an acquaintance you have not seen for a number of years. You recognise the target's face, recall a few contexts in which both of you interacted, and reminisce hearing gossip suggesting that he was untrustworthy. This experience happened promptly, and might qualify as a case of confident person identification.

A number of researchers in the biological and cognitive sciences have investigated the mechanisms that subserve this type of perceptual recognition, the recognition of faces – see chapter 4 on the "face-recognition programme." These accounts predict that, in the context of ordinary social interactions, a typical human learner develops robust skills for identifying persons via the experience of recognising their faces (Bruce & Young, 1986; Clifford & Bull, 1978; Young & Bruce, 2011). Thus, as it seems, evidence on the experience of robustly identifying someone by means of face recognition might lend support to this implication:

"Face-recognition ⭢ person-identification" heuristic: if I have recognised a particular face *F*, then I have identified a person *P*.

A learner can use this implication as a heuristic about identification. I use the term *heuristic* to refer to a simple rule or pattern of action that can be used for solving a certain type of problem. Typically, a heuristic does not guarantee that the learner who is using it will solve the problem at hand, or reach a true conclusion. Research on the roles of heuristics in decision-making and explanation has been developed in a wide body of interdisciplinary research that I discuss in further detail in chapter 3. Like many other heuristics, the "face-recognition ⭢ person-identification" heuristic can help a learner decide whether or not a particular type of problem is solved. In the example, it might help the learner decide whether or not someone has been identified.

If one focuses on the swiftness and robustness of human learners' capacity to visually recognise the faces of relatives, friends, and acquaintances, one might be tempted to consider that "face-recognition ⭢ person-identification" heuristic as a highly plausible implication. Because its antecedent singles out face recognition, adopting that heuristic suggests treating face recognition as a core *explanandum* phenomenon of a theory of person identification. In fact, a productive and wide body of research in the sciences of person identification has just focused on the phenomenon of face recognition. Yet, there are many different reasons to deem that the heuristic is misleading. Although face recognition is undeniably one of the means we employ for identifying persons, evidence of robustness in face recognition should not lead us to underestimate the complexity and uncertainty of the means we use to track and identify persons.

Let us return to the case of the recognition of an old acquaintance. On reflection, the experience of recognising a target's face can be, or even should be tainted by incertitude. Although you have had the striking experience of recognising a familiar person, you may nonetheless wonder how it is that you actually "identified" that person. The target's overall appearance must have changed, bearing signs of aging or changes in social status, and the gossip about his untrustworthiness may make you question the veracity of the biographical

information that you recall. On the one hand, as long as you choose not to engage into a specific reflection about, or enquiry into that person's identity, it seems reasonable to maintain a low degree of credence in your initial identification. On the other hand, if you were to engage into an extensive reflection about, or enquiry into that person's identity (e.g., by asking the target about his identity or gathering evidence by other means), your act of identification would no longer rely on face recognition alone. Thus, either way, no indefeasible reason supports the belief that a robust identification judgment derives from the "face-recognition ⊃ person-identification" heuristic. Thus, face recognition is distinct from person identification (Bullot, 2014a; Groebner, 2001, 2004; Thomson, 1981).

This phenomenological argument provides a first clue indicating that, in a nutshell, person identification is *more complex than it seems*. Importantly, though, the most interesting evidence of this complexity is not limited to phenomenology. Let us now turn to extraordinary identifications and misidentifications in forensic practice.

2.2   The misidentification of look-alikes, fingerprints, and the Will West case

Among the numerous cases of forensic misidentification analysed in scholarly works,[20] the Will West case is particularly illustrative of the challenges posed by the complexity of person identification.

According to Wilder and Wentworth (1918),[21] Will West was incarcerated in 1903 at the United States Penitentiary in Leavenworth, Kansas. Near the time of his arrival at the Penitentiary, following the protocol of the widely used system for "anthropometric identification" invented by Alphonse Bertillon (1883, 1885, 1890, 1896), West's name,

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[20] For other infamous accounts of forensic misidentifications and their social costs, see, for example, and the numerous cases discussed in Bedau and Radelet (1987), S. A. Cole (2005), Doyle (2005), Douglass and Steblay (2006), Quinche (2006), and Lampinen and colleagues (2012). The Timothy Cole case (McKinley, 2010) is a particularly tragic case.

[21] This narrative was subsequently repeated in numerous other publications (including an official brochure from the FBI, see U.S.-F.B.I., 1991); see Cole (2001).

photographs, measurements, and offense were recorded on a card conforming to the instructions of Bertillon's system.

Figure 2-1 Photographs of Will West as recorded on his Bertillon signaletic card

The Bertillon system, nicknamed "Bertillonage," relies on the production and analysis of records of bodily information by means of "signaletic" cards. These cards were part of a system that Bertillon called "signalment", the aim of which was "to preserve a sufficient record of the personality to be able to identify the present description with one which may be presented at some future time" (Bertillon, 1896: p. 11). Bertillon viewed this system of identification by means of cards as "the instrument, by excellence, of the *proof of recidivation*, which necessarily implies the *proof of identity*" (1896: p. 11).[22] Thus, using Strawson's (1959) vocabulary (see section 1.2), one of chief functions of these cards was to help learners resolve problems of person *reidentification*.

According to Wilder and Wentworth's (1918) account, West was brought into the office of the record clerk to be measured and photographed "a few days after his committal" (1918:

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[22] Bertillon distinguishes at least three social functions for signalment: first, to "verify a declared identity" (1896: p. 12); second, to provide evidence "to prove non-identity" of innocent persons with criminals in such cases as victims of a forger or an unfortunate similarity of names (1896: p. 11); and, third, in the case of individuals who actively conceal their identities, "to cause the true identity to be discovered" (1896: p. 12).

p. 31-32). Because the clerk thought that he recalled meeting the convict, he ran his measuring tools over West and went to the storage of Bertillon cards with the measurements thus obtained. The clerk retrieved a card that matched the measurements called for, properly filled out, accompanied with photographs and bearing the name "William West" – these photographs are presented as Figure 2-2.

Figure 2-2 Photographs of William West as recorded on the Bertillon card that bear his name

Wilder and Wentworth's (1918) narrative continues as follows:

> This [i.e.,*"William West"*] card was shown to the prisoner [*i.e., Will West*], who grinned in amazement, and said, "That's my picture, but I don't know where you got it, for I know I have never been here before." (Wilder & Wentworth, 1918: p. 32)

According to Wilder and Wentworth (1918), the clerk then read the back of the card. It stated that William West was already a prisoner in the penitentiary, having been committed to a life sentence on September 9, 1901, for the crime of murder. Thus, this evidence undermined the clerk's hypothesis that Will West had been previously incarcerated. Wilder and Wentworth (1918) conclude that:

> [T]he [*"William West"*] card found was that of a different man, still within the walls of that very prison, yet of the same name, the same facial expression, and *practically the same Bertillon measurements* as the newcomer! (…) here was a case of the most

remarkable resemblance of two unrelated persons on record; since neither photographs nor the Bertillon measurements were of any avail in establishing the identity of these two men. (Wilder & Wentworth, 1918: p. 32-33)

Over the past century, this case has had an odd journey through the hall of fame of forensic science. It went from celebrity for methodological significance to disrepute for historiographical inaccuracy (S. A. Cole, 2001, 2007).

This case's initial notoriety stemmed from the fact that it appeared to many professionals of forensic-identification practices as a perfect case to demonstrate the fallibility of several major identification methods. According to the accounts that made the case famous, the near indiscernibility of Will and William West from the standpoint of visual recognition, "signaletic" body measurements, and name analysis motivated the abandonment of Bertillon's (1885, 1896) "signaletic" system in favour of Galton's (1892) fingerprinting system for forensic identification (S. A. Cole, 2001: p. 140-142). This is because forensic enquirers successfully gathered identifying evidence that distinguished both men by reference to differences in their fingerprints. For example, this interpretation found its way to a brochure about the history of fingerprinting published by the FBI, where the West case is presented as a "nearly perfect case" that falsifies the claims made by the defenders of the Bertillon system.[23]

The concern with this historical approach to the West case is that a number of narratives about the case could not be verified from other historical sources, or contained erroneous reports of the chronology of the transition from the Bertillon's (1896) system to Galton's

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[23] The text includes these statements: "It would be hard to conceive a more nearly perfect case for refuting the claims of rival systems of identification. Although the two Wests denied being related, there was a facial resemblance like that of twin brothers. The formulas derived from their Bertillon measurements were nearly identical (…), there was the crowning coincidence of the similarity of names. The fallibility of three systems of personal identification – names, photographs, and Bertillon measurements – were demonstrated by this one case. On the other hand, the value of fingerprints as a positive means of identifying people was dramatically shown." (U.S.-F.B.I., 1991: p. 7)

(1892) system of identification.[24] These inaccuracies, in turn, raise the suspicion that the authors of these inaccurate narratives of the West case might have fabricated or uncritically repeated a biased assessment of Galton's (1892) system. In this vein, Simon Cole (2001, 2007) argues that "the West incident was concocted well after the fact to create an appealing origin story for American fingerprinting" (S. A. Cole, 2007: p. 245). The West case might be a fable fabricated to serve as a picture-perfect falsification of the main competitor of the time – Bertillon's (1896) "signaletic" system.

This charge is one of the building blocks in Cole's (2001, 2007) critique of forensic science. Cole investigates the epistemic and social consequences of the overconfident trust that a number of forensic scientists had in Galton's (1892) system of identification. Specifically, Cole (2001, 2007) draws attention to misidentifications (e.g., wrongful accusations) and other dire consequences (e.g., racial biases) that may have resulted from overconfidence in the robustness of Galton's system. As I read it, the critical epistemological lesson that can be draw from such a historical research is twofold.

First, the analysis provides evidence that, *pace* a widespread post-Galtonian view, a learner cannot *robustly* identify an individual person on the basis of a single identification method or criterion. Learners need to guide their identification practices with strategies that combine multiple methods or criteria of analysis (see the role of integrative tracking in chapter 7), which can independently converge toward a single solution to the identification problem. In other terms, there is no single "infallible identifier," or "ultimate individualiser."

Second, a number of practitioners of forensic identification have interpreted Galton's system for identification by means of fingerprint matching as an infallible method. Although Cole's (2001, 2007) critique does not rely on the theory of heuristics, that point can be nicely illustrated with a conjecture about heuristic-based reasoning. In a nutshell, the analysis

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[24] The problems include the absence of press report about the case (S. A. Cole, 2007; Olsen Sr., 1982, 1987), inaccuracies in reports (e.g., in Smyth, 1980; U.S.-F.B.I., 1991) about the transition from the Bertillon system to the Galton system, and inaccuracies regarding the predictions made by norms of Bertillon system of identification (S. A. Cole, 2007; Olsen Sr., 1982, 1987).

suggests that, in the daily practice of forensic person identification, forensic practitioners might have had excessive recourse to a type of heuristic of this form:

"Latent-fingerprint-match ⭢ person-identification" heuristic: if I have recognised a match between Latent Fingerprint 1 and Latent Fingerprint 2, then I have identified (or individualised) a single person *P*.

Cole's (2001, 2007) critique includes a careful historical investigation of the biases and errors that can be elicited by the social diffusion of this type of heuristic.

Even if Wilder and Wentworth (1918) were mistaken in overconfidence in the "latent-fingerprint-match ⭢ person-identification" heuristic, they were nonetheless correct on an important epistemological issue. In addition to bolstering the case for the use of latent fingerprints, Wilder and Wentworth (1918) used the West case along other sources of evidence that demonstrate the fallibility of face recognition, which is subsumed under their concept of "sight recognition" (Wilder & Wentworth, 1918: p. 27-40).

Even if Cole's critique is sound, the West case can continue to be interpreted as one of the many cases in which similarities in appearance between two individuals (e.g., relatives, look-alikes, twins) can trump identification decisions that primarily rely on face recognition and the "face-recognition ⭢ person-identification" heuristic. Thus, there is an element of truth in Wilder and Wentworth's (1918) claim that "*Sight Recognition is not Identification*" (1918: p. 40; italics in the original).

Even in contexts where agents are not trying to conceal their identities, visual recognition of faces or photographs of faces (either in photographic or video records[25]) can be trumped when used as a means for identifying persons. A learner's ability to recognise faces is error prone in a wide range of social contexts (Lampinen et al., 2012; Locard, 1932; Thomson, 1981, 1995), especially in contexts in which a learner is asked to identify unfamiliar faces (Young, 1998; Young et al., 1985). Thus, the West case is just one example of a larger body

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[25] For a discussion of the judicial uses of photographic records, see Edmond and colleagues (2009).

of evidence undermining the credibility of the "face-recognition ⊐ person-identification" heuristic.

2.3   Deceptive impersonations and social control

Apparently, the misidentification of Will West for William West was not triggered by an act of deception. However, misidentifications elicited by deceptive acts are common and ancient (Groebner, 2004/2007; Trivers, 2010). Early modern and modern human learners operate in social environments where agents can offer biased presentations of their selves (Goffman, 1956/1959), conceal their genuine biological and social identities (Davis, 1983), fabricate new social identities with forged identification documents (Etzioni, 2005; Marx, 1988), and have their deceptive skills enhanced by self-deception (Trivers, 2010). Human impostors can manipulate the behaviour of other persons by means of *deceptive impersonations*, which are distinct from non-deceptive impersonations in either pretence or acting.[26] The former type can be illustrated by another example of the complexity of person identification: the notorious[27] case of Martin Guerre (Coras, 1561; Davis, 1983, 1988), which is often interpreted as one of the founding cases of the criminology of forensic identification (S. A. Cole, 2001; Locard, 1932: p. 12-13).

Martin Guerre was a French peasant born around 1524 in the Basque village of Hendaye who left his wife, child, and village in 1548. In 1556, eight years after Martin's disappearance, a man claiming to be Martin Guerre – call his persona *New Martin* –arrived in the village. For about three years, New Martin resided with Bertrande Guerre (Martin Guerre's wife) and Guerre's son. After a complaint lodged by a relative, New Martin was

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[26] I will assume that impersonations performed in playful pretence games (pretend-plays) and professional acting in theatres and cinema actors are not deceptive because the audience of these impersonations is typically aware that the impersonators' personas are fictional. Deceptive impersonations occur, in contrast, when the impersonator deceives a set of learners.

[27] Like other famous impostor cases involving impersonation (e.g., Frank Abagnale, Frédéric Bourdin) or forgery (e.g., Han van Meegeren, Elmyr de Hory), the case of Martin Guerre has inspired narrative artworks (Bergsma, 1958; Lewis, 1970), including several cinematographic or theatrical adaptations.

eventually suspected of impersonation and twice tried in court. During the final trial in which the authentic Martin Guerre made a surprising appearance, Judge Jean de Coras and his associates ruled that New Martin was an imposter named *Arnaud du Tilh*. After this revelation and Arnaud's admission of guilt, he was sentenced to death for adultery and fraud, and was executed in 1560.

Arnaud du Tilh impersonated Martin Guerre and concealed his identity from most – and possibly all – of the villagers who thought that they had recognised and interacted with Martin Guerre for several months. This imposture enabled him to partially control the behaviour of Guerre's relatives and other villagers. Du Tilh's imposture was made possible by his facial resemblance with Guerre and his knowledge of intimate biographical information on Guerre's early life (gleaned in the context of a brief encounter between the two men). Building from his resemblance with Guerre, Arnaud du Tilh acted in the manner of a "forger of agency"; that is, he was successful at feigning important characteristics of Martin Guerre's agency, such as Guerre's autobiographical memory, emotions, decision-making, and social patterns. Du Tilh might have taken advantage the villagers' use of conformist heuristics in decision-making processes on New Martin's personal identity (Bullot, 2015). The ramifications of du Tilh's impersonation of Guerre suggest that the failures of recognition-identification systems can sometimes be durable and socially pervasive (Bullot, 2015; Locard, 1932). The case might be another source of evidence of the fallibility of the "face-recognition → person-identification" heuristic.

It is my contention that examples of deceptive impersonation, such as the Martin Guerre case, are significant and need to be explained by a theory of person identification and control (Bullot, 2014a). A reader may, nonetheless, object that we should not overstate the significance of this case because the impersonation might be a quirky event that could only take place in early modern Europe. The critic might argue that, in a post-industrial modern state, a plan aiming to deceptively impersonate someone else over a period of several months would be doomed to failure in most, if not all cases. In modern states, learners and institutions have access to wider range of identification systems than the early modern French villagers and judges who deliberated on New Martin's identity. For example, learners in modern states

can have access to a variety of government-managed identification systems: population censuses and registries, passports and other identification documents (Torpey, 2000), and mechanisms for biometric and forensic identification such as Bertillon's (1885) signaletic system, latent fingerprint analysis (S. A. Cole, 2001), DNA-fingerprinting, biometrical techniques, and networked databases with integrated processing of identification information (Etzioni, 2015; Nissenbaum, 2010; Solove, 2004). These modern institution-derived identification systems are used to police society and enforce norms aimed at precluding and deterring deceptive behaviours like du Tilh's imposture.

Emphasising historical and cultural differences in resources by means of which learners identify others is justified (see chapters 7-9). However, these historical differences do not diminish the significance of deceptive impersonations. Deceptive impersonations belong to a significant and widespread category of deceptive behaviours in which one communicates dishonest signals about oneself (Gambetta, 2005, 2009). The behaviours based on dishonest signalling raise the fundamental challenges and questions about the contexts in which such behaviours propagate, both *within* and *in-between* social *groups*.

If one considers deceptive behaviours *within* sociocultural groups, research has documented different types of agents who can communicate dishonest signals that have the propensity to elicit misidentification errors (Gambetta, 2005; Goffman, 1956/1959; Trivers, 2010). Behaviours that communicate dishonest signals range from *venial self-misrepresentations*, in which a deceiver misrepresents only a small number of his properties, to *lasting deceptive impersonations*, in which the impostor passes herself off as someone else (either by forging a fictional persona or by pretending to be another actual person).

Venial acts of deception are socially pervasive. Gambetta (2005: p. 222) provides a series of examples of venial deception that include the case of a distinguished member of the Columbia University faculty who admitted passing himself off as a medical doctor in order to jump restaurant lines, the practice of children who try to pass as persons aged over 18 to access adult-restricted goods and opportunities, and the acts of older individuals who try to pass as younger to qualify for student discounts or other benefits. In these examples, the

agents misrepresent only a small number of their properties (their age or professional occupations).

Deceptive impersonation such as du Tilh's impersonation of Guerre are remarkable and impressive because such acts demands that the deceiver misrepresents most of his own historical properties, which is likely to be highly costly in terms of cognitive resources. *Pace* the objection to the significance of the Guerre case, deceptive impersonations are present and pervasive in modern states, in which acts of deception and impersonations vary in kind and *modus operandi*. Agents may communicate dishonest signals about themselves to obtain social benefits and avert or mitigate threats. Modern technologies for person authentication (e.g., identification documents, password-based identification on the Internet) can afford impostors new opportunities for deceptive impersonations.

In respect to *deceptive impersonations of actual individuals*, documented cases include Frank Abagnale's (1980/2001) frauds and impersonations, the impersonation of Nicholas Barclay by Frédéric Bourdin (Grann, 2008; Layton, 2012), a number of reciprocal impersonations by look-alikes and twin siblings (Bowyer, 2011; Segal, 1999/2000: p. 93), and indirect impersonations of renowned artists by art forgers (e.g., Han van Meegeren (Dutton, 1979) and Elmyr de Hory (Wells, 1974)). Like the case of Martin Guerre, which has inspired the storyline of many narrative artworks (Amiel, 1993; Bergsma, 1958; Lewis, 1970; Vigne, 1982), many examples of modern deceptive impersonation and forgery have been depicted in popular culture and arts. See, for example, the portrayals of impostors and forgers Elmyr de Hory in *F for Fake* (Wells, 1974), Frank Abagnale in *Catch Me If You Can* (Spielberg, 2002), Frédéric Bourdin in *The Imposter* (Layton, 2012), and confidence tricksters ("con artists", fraudsters) or criminals in numerous cinematographic works.

The behaviour of impostors using deception to attain selfish opportunistic goals raises the problem of free riders. In economics, game theory, the theory of collective action (Elster, 1989; Hardin, 1971) and cooperation (Sterelny, 2012), the *free rider problem* refers to a cluster of societal and trust problems engendered by agents who benefit from resources or services without paying for the cost of these resources or services. The behaviour of agents

who "free ride" collective resources or services can results in either an under-provision of goods or services, or in an overuse of a common property resource. It is clear that a number of deceptive impersonations aim at free riding the resources entitled to the impersonated person. For example, Du Tilh created the persona of New Martin for benefiting from Martin Guerre's social network and possessions without paying for the costs of such social resources. Because his deceptive behaviour enabled him to acquire social benefits without paying for the costs of such benefits, he acted as a type of agent that can be classified either as an *opportunist* acting as a mimic (Bacharach & Gambetta, 2001; Frank, 1988; Gambetta, 2005), or as a *free rider* in reference to the problem of free riding (Elster, 1989; Hardin, 1971). Likewise, contemporary criminals using impersonations (e.g., confidence tricksters, cybercriminals, cover-up agent) take impersonations as a means to gain access to resources that are entitled to another individual agent or a group of agents.

Deceptive impersonations can be generated by relations between groups such as competition and conflict. Such in-between group deceptive impersonations vary both in kind and modus operandi. One kind derives from social strategies aimed at mitigating the costs of deception, free riding, and criminality. In modern states, different types of agents who are part of law enforcement and secret intelligence agencies have to operate under cover to exert their profession. Workers who operate as professional undercover impersonators include undercover police officers (Marx, 1988), informants, and spies. Furthermore, military strategy and warfare (Heuer, 1981; Mearsheimer, 2011; Whaley, 1969/2007, 1982b) has long included deception among the resources for waging wars, and military deception can include acts of deceptive impersonation (e.g., the impersonation of Field Marshall Montgomery by M. E. Clifton James (Clifton, 1954)).

In sum, to use Kim Sterelny's (2003, 2012) fitting metaphor, human agents socialise in the context of *translucent environments* – that is, environments where some agents may not be who they appear to be, and where the significance of an action may not always be what is appearing to be communicated. In such translucent environments, although genuine cooperators exist, learners have to take into consideration the existence of deceivers from a variety of persuasions. Deceivers can lie about their identities and receive undue benefits from

acts of deception. Deceivers can manipulate learners' recognition-identification mechanisms and thereby lure them into erroneous identifications. This is why the tracking and identification of impostors and deceivers is fundamental: a learner who fails to track and identify an impostor may be exposed to exploitation by the impostor.

2.4   Multifaceted complexity and significance of person identification

I have discussed three kinds of person-identification phenomena: the phenomenology of the recognition of an old acquaintance, the forensic identification of look-alikes (as in the West case), and the identification of impostors (as in the Martin Guerre case). These cases illustrate several important aspects of person identification.

First, person-identification phenomena, and the tracking of identities at the core of person identification, are phenomena of *critical significance* to us because these phenomena are generated by the mechanisms and systems that are at the core of human cognition and sociality. Person-identification phenomena are linked, or encompass the ability to recognise individuals (Bruce & Young, 1986), to attribute proper names (Valentine et al., 1996), to predict and understand the actions and mental states of others (Bloom, 2004; Dennett, 1987), to ascertain trustworthiness (Sterelny, 2012), to understand behaviours and emotions expressed at the occasion of births and deaths (McMahan, 2002), to correctly allocate rewards (or punishments) and coordinate welfare services (Sorell & Draper, 2012), to attribute rights and responsibility (Heider, 1958; Woolfolk et al., 2006), and to keep track of social relations (Fiske, 1992). Person-identification is necessary to understanding social relations such as communal sharing (keeping track of people as equivalent members of the same social category), authority rankings (keeping track of social hierarchies), and equality matching (keeping track of the imbalances among people) – see Fiske (1992).

Second, the cases suggest that decision-making processes aimed at identifying a person are challenged by *uncertainty* in a variety of problem-inducing situations. This means that a research programme exclusively focused on cases of robust and unproblematic identification would screen out significant phenomena of person identification. Confusing situations that can result in epistemic challenges for identification include contexts in which a learner has to

identify an unfamiliar target (e.g., trying to identify a person met only once), a target perceived indistinctly (e.g., a target perceived from a distance in the fog), a target using deception (e.g., an impersonator like Arnaud du Tilh), and a target whom organism it is impossible to perceive (e.g., a person who died a long time ago).

Third, the previous sample of cases also illustrates the *complexity and sociocultural diversity* of learning practices that take part in the practices of person identification. The *diverse cognitive skills* of person identification include skills that permit perceptual recognition of human faces and organisms, abilities for self consciousness and self knowledge,[28] the ability to integrate information for tracking conversational partners in a conversation,[29] the ability to form judgments that refer to individuals (singular thoughts and beliefs) and social categories, mechanisms for integrating information about targets represented in different frames of reference, and reasoning abilities necessary for interpreting traces and clues of a person's identity.

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[28] Several lines of enquiry have investigated topics related to *self-identification* such as *self-consciousness* (Campbell, 1995; Carruthers, 2011), or *self-knowledge* (Carruthers, 2011), and *self-deception* (Barnes, 1997; Mele, 1997; Trivers, 2010). Enquiries centred on the *self* have been developed from the standpoint of philosophical enquiry (Campbell, 1994; Korsgaard, 2009; Shoemaker, 1963), a variety of psychological traditions (Bem, 1972; N. R. Brown, Hansen, Lee, Vanderveen, & Conrad, 2012; Conway, 2005; Erikson, 1959/1980; McAdams, 2001; Rochat, 2003), and the social sciences (Belk, 1988; Goffman, 1956/1959). Although the problems of self-identification are fundamental topics for a theory of person identification, these problems neither exhaust, nor should occlude the questions about the behaviours and capacities to identify other individuals. Thus, the scope of person identification reaches beyond the questions of the self because multiple social behaviours imply the identification of other persons and agents. As numerous accounts have focused on investigating self-identification, the present enquiry focuses on the capacity to identify other human persons. Until recently, the topic has been overlooked by most researchers (Rich & Bullot, 2014).

[29] The action of developing a conversation depends critically on the ability to reciprocally track one's conversational partner as the same cooperative agent over the conversation. This conversational tracking requires both integration of a variety of visual and auditory perceptions (Calvert et al., 1998), context and situation understanding (Zwaan & Radvansky, 1998), and cooperative work towards conversational relevance (Sagi & Rips, 2014; Sperber & Wilson, 1986/1995).

The diverse *sociocultural resources* that can support person identification include practices that scaffold the learning of identification skills such as linguistic reference to individuals (e.g., using and securing the use of proper names), communication of gossip and testimonies (e.g., the testimonies of Guerre's relatives), and a variety of techniques and technologies that can gather, store, and classify evidence relevant to the identification of human agents (e.g., Bertillon's "signaletic" system, identification documents, latent fingerprint analysis, DNA analysis, online databases).

2.5   Recapitulation, on complexity of identification

Because the phenomena of person identification are historically diverse and complex, one of the basic problems concerns the definition of the phenomena to be explained by a theory of person identification. What are the phenomena – in the sense of the *explananda*[30] – that should count as cases of person identification, and thus must be explained by a theory of the skills and practices of person identification? Answering this question is made difficult by the diversity of phenomena of person identification.

As in many other research topics in the social sciences,[31] theories of person identification in the biological and social sciences tend to focus on specialised phenomena (*explananda*).

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[30] One of the chief goals of a scientific theory is to explain precisely delineated phenomena (Bechtel & Abrahamsen, 2005; Craver, 2007; Keil & Wilson, 2000). In a number of accounts (Ruben, 1990: p. 23-25; Salmon, 1992), the fact (or phenomenon) that is to be explained is named the *explanandum* (plural: *explananda*). The theoretical entity that does the explaining is referred to as the *explanans* (plural: *explanantia*). The task of a scientific explanation is typically to provide a set of hypotheses, sentences, or other *explanantia* that can predict, or at least make sense of the occurrence of the *explanandum*. To provide an explanation, an enquirer has to present an adequate description of the target *explananda*. Finding an accurate description of an *explanandum* phenomenon is often part of finding an explanation that accounts for the occurrence of that phenomenon. Furthermore, in the process of developing an explanation of a phenomenon, the knowledge accrued by ongoing research can provide researchers with opportunities to refine the specification of a target phenomenon.

[31] For discussion of the disunity of social sciences from different perspective, compare, for example, Tooby and Cosmides (1992), Cole (1996/1998), Sperber (1996), Gintis (2007), and Mesoudi (2011).

Such phenomena are often defined within the often-idiosyncratic boundary of decoupled research programmes or academic disciplines. For example, programmes of research have separately investigated phenomena as diverse as (i) face and person recognition (see below), (ii) social aspects of the perception of persons (Bem, 1972; Heider, 1958; Kenny, 1994, 2004), (iii) the communication of honest and deceptive signals about person's individual characteristics and sociocultural affiliations (Gambetta, 2005, 2009; Jenkins, 1996/2008; Skyrms, 2010; Sterelny, 2012), (iv) the ability to refer to individuals (Jeshion, 2010; Strawson, 1959), and (v) the techniques and social scaffolds[32] employed by human enquirers to track and identify persons (S. A. Cole, 2001). Because these programmes have developed in academic disciplines that use different methodologies, there is very little research that attempts to develop theoretical bridges and platforms to combine these programmes of enquiry into integrative theories of person identification. In the next chapters, I examine the role that the antagonism between reductionistic and contextualistic heuristics plays in both the growth and fragmentation of research on person identification.

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[32] The debates surrounding the West case are useful to illustrate the fact that some behaviours and practices of person-identification benefit from social networks, cultural transmission of skills, bodies of cultural and theoretical knowledge, and technical infrastructures that are specific to particular historical contexts. However, a number of theories of identification analyse identification with reductionist heuristics that ignore the social and cultural aspects of person identification, interpreting identification as either a logical phenomenon, a purely psychological phenomenon, or a brain phenomenon.

3   Heuristics and Biases in Scientific Reduction

What are the strategies that researchers can and do adopt to explain person-identification phenomena, and thus mitigate the complexity of such phenomena? What are the advantages and limitations of complexity-reducing strategies? Two thoughts derived from recent research on heuristics provide a plausible way to address these questions. First, to mitigate the problems posed by complexity, it is plausible that scientists routinely use heuristic strategies for reducing the complexity of person-identification phenomena. Second, because heuristics tend to induce systematic biases, heuristics developed to explain person identification may induce systematic explanatory biases. In chapters 3, 4, and 5, I use this approach based on the theory of heuristics to assess a body of research on person identification. This chapter introduces the philosophical theory of heuristics and scientific reduction.

3.1   Heuristics, scientific reduction, and the mitigation of complexity

A fundamental aspect of the problem of complexity in science can be expressed thus: what can scientists do when the complexity of the systems they are studying apparently exceeds the limits of their cognitive abilities for analysis and comprehension?[33] Several philosophers of science have defended a persuasive answer to this question, an answer inspired by Herbert Simon's (1956, 1969/1996, 2000) research on problem-solving heuristics. Roughly, they argue that scientists mitigate the complexity of research problems by devising a variety of *heuristic strategies*, which can operate either as *cost-effective procedures* for converting complex problems into simpler ones (Bechtel & Richardson, 1993/2010; Wimsatt, 1986b) or

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[33] For treatments of this problem, see, for example, Simon (1956, 1962, 1969/1996), Wimsatt (1986b), and Wilson (2004).

as *second-order heuristics* – which may be termed *meta-heuristics*[34] – for assessing and optimising the explanatory value of first-order heuristics (Hey, 2014; Wimsatt, 2006).

William Wimsatt (1976, 2006, 2007), one of the pioneers of the research on scientific heuristics, has contributed an insightful account of *reductionistic heuristics* that I analyse below. Several other philosophers of science have defended other important accounts on this topic, including William Bechtel and Robert Richardson (1993/2010), Thomas Nickles (1976, 2006, 2015), Lindley Darden (1991, 2006; Machamer, Darden, & Craver, 2000), and Spencer Philips Hey (2014). A number of these accounts assess or refine the hypothesis that certain forms of scientific *reductions* operate by means of heuristics (Bechtel & Richardson, 1993/2010; Darden, 1991; Hey, 2014; Wimsatt, 1976, 2006, 2007). As I propose below to deploy this type of account of scientific reduction in the context of the theory of person identification, a few clarifications about reductionism and its varieties are in order.

Debates about scientific reduction tend to focus on whether or not the theories, concepts, or explanations from one scientific domain can be deduced from, or explained by the theories, concepts, or explanations from another domain. The former is sometimes described as the *upper level* domain[35] or *explanandum* phenomenon, and the latter as *lower level* domain or *explanans*. Questions relative to this inter-domain translation or explanation are central to many accounts of scientific reduction in physics (e.g., Nickles, 1973), biological sciences (Brigandt & Love, 2008/2014; Wimsatt, 2006), and the "special sciences" like psychology and economics (Fodor, 1974; Wilson, 2004). These philosophical debates have resulted in the specification of several *types of scientific reduction* that are fundamentally distinct. I identify some of these types of reduction next.

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[34] As noted by Wimsatt (2006), the assumption of the decomposability of a system and the heuristic identification and decomposition can be categorized as meta-heuristics because they describe characteristics of a large number of specific heuristics, and perhaps of all mechanistic heuristics.

[35] Although common (Wimsatt, 2006), the metaphor of "lower" and "upper" levels is questionable: see, for example, Ylikoski (2014) and, more generally, the debates about scales in explanatory practices – such as the debate about explanation of interactions between "macro" and "micro" scales (Alexander, Giesen, Münch, & Smelser, 1987).

3.2   "Nothing but" and eliminative reductionism

A common understanding of reductionism views reduction as a description of an *explanandum* phenomenon (also referred to as "upper" level[36] or "macro" domain) with "nothing but" concepts and explanations of a "lower" level (or "micro") domain, which is judged by reductionists to be more fundamental. Following Wimsatt's (2006) account, I call this concept *"nothing but" reduction*. This expression usefully captures the radicalised attitude of the reductionists who unconditionally deny the causal efficacy of the "upper" level domain, or aim to eliminate the concepts associated with the description of that "upper" level.

"Nothing but" types of reduction are found in a variety of *eliminativist reductionism*. For example, the hypothesis that mental states such as beliefs and desires are "nothing-but" neural states, which is associated with *eliminativist materialism* in the philosophy of mind (e.g., Churchland, 1981, 1989), and belongs to a "nothing but" type of reductionism.

Several forms of "nothing but" reductionism include accounts based on the thesis that the behaviour of a system must be explained by means of reference to smaller parts of that system such as particles described in microphysics or molecular pathways described in molecular neuroscience (Bickle, 2006). Wilson (2004) proposed to call *smallism* the reductionistic metaphysics that discriminates "in favour of the small" (2004: p. 22). Smallism drives explanatory and methodological ideal asserting that small things and their properties "are seen to be ontologically prior to the larger things that they constitute" (2004: p. 22). Wilson suggests that smallism motivates individualistic methodologies that can be traced back to theories of corpuscularian entities and primary qualities central to the metaphysics and science from the seventeenth and eighteenth centuries.

"Nothing but" and eliminativist reductionism tend to generate controversies. This is because these approaches generate contentious injunctions for thorough elimination of the "upper level" phenomenon or of the concepts describing it, which might be highly significant

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[36] This common understanding of *reductionism* is discussed by, or mentioned in Geertz (1973: p. 11, 216-217), Fodor (1974), Sperber (1996: p. 10, 15), and Wimsatt (2006).

concepts as in the common-sense concepts that we use to explain human actions and mentality (so-called "folk psychology"). Strict eliminativism has tended to be a minority position in the philosophy of science (Wimsatt, 2006). Likewise, scholars in the social sciences who adopt contextualist critiques of reductionistic accounts of social and cultural phenomena often take aim at "nothing but" and eliminativist types of biological reductionism (e.g., Geertz, 1973). I discuss these contextualist critiques further below.

3.3   Successional vs. mechanistic (inter-level) reduction

"Nothing but" reductionism is distinct from several other forms of reductionism. Within the tradition of logicist theories of science published between the 1930's and the 1970's, the prominent accounts of scientific reduction defined inter-theoretic reduction as a relation between theories expressed in terms of theoretical vocabularies, laws, and "bridge principles" (e.g., Fodor, 1974; E. Nagel, 1961; Schaffner, 1967). In this tradition, for example, Nagel (1961) has argued that one theory is reduced to another if theoretical vocabulary for its entities were definable, and its laws logically derivable from the laws of the other. Nagel's account posits that such a reduction relies on a set of empirical identifications, correlations, or reconstructive definitions. In contrast to this logicist understanding of reduction, which has been prevalent in analytic philosophy from the 1930's until the 1970's, several other philosophers of science (e.g., Glennan, 1996; Nickles, 1973; Wimsatt, 1976) have derived their analysis of scientific reduction from the history and sociality of scientific practice; this tradition has led to the distinction between successional reduction and inter-level reduction.

Successional reductions are relations of translation between theoretical entities in which one theory or model is transformed into another, often by means of approximations – see, for example, Wimsatt's (1976, 2006, 2007) account. A researcher can use successional reduction to specify similarities and differences between two theories, typically between two theories that are close successors in the history of scientific theories. An example of successional reduction in physics is how special relativity reduces in the limit to classical mechanics – see Nickles (1973) and Wimsatt (2006). Successional reduction can translate theories or models of entities that operate at the same level of organisation, and theories that are not bound to a

specific level of analysis. Because translations from successional reductions are carried out by means of approximations rather than logical identities, the meaning of the translated entities is context-dependent. Consequently, the semantics of these translations lacks many of the logical characteristics of deductions. In particular, successional reductions are not truth-preserving, and historical sequences of successional reduction are not transitive (Wimsatt, 1976, 2006).

Successional reduction is distinct from *mechanistic reduction*, also described as *inter-level reduction* (Wimsatt, 2006). Mechanistic reductions aim to account for an *explanandum* phenomenon (at an "upper" level or "macro" scale) by means of reference to a mechanism that produces that phenomenon, which may be localised at a "lower" level or at a different scale of analysis. These reductions are often illustrated with successful mechanistic explanations in the biological sciences (Craver, 2007; Craver & Bechtel, 2006; Darden, 2006). For example, according to Wimsatt (1976, 2006) and Darden (1991), and Waters (1994) biological inter-level reduction took place in the way Mendel's inheritance factors were successively localised to a series of micro-scale mechanisms, which included chromosomes, genes in the chromosomes, bands in the chromosomes, and finally to specific sites in chromosomal DNA by means methods using polymerase chain reaction.

To operate as a *reductive* explanation, reference to a mechanism needs to describe how the composition of parts and activities of the mechanism can produce the *explanandum* phenomenon (the "upper" level phenomenon, the behaviour of the system being reductively explained). This mechanistic reduction is *causal* because the ("lower" level) mechanism is understood as the system that *causally controls* the production of the *explanandum* phenomenon. This description is also understood as *compositional* because the reduction demands a decomposition of the mechanism; thus, it has to assume the ontological hypothesis of the decomposability of the mechanism.

Reductive inter-level explanations can be guided by either the discovery that different terms or descriptions refer to the same entity – that is, the discovery of *referential identities* (Schaffner, 1967; Wimsatt, 1976) – or the discovery of *localizations of causal control*

(Bechtel & Richardson, 1993/2010). As heuristic strategies, identifications and localizations can be interpreted as *meta-heuristics* (Wimsatt, 2006) because they can serve as hypothesis generators and assessors, suggesting new predictions at one level or scale from properties or relationships at other levels or scales. In contrast to successional reductions, these inter-level mechanistic reductions are not primarily guided by theoretical similarities and approximation.

3.4   Reductionistic heuristics to mitigate complexity

An important suggestion made by philosophers of science interested in the theory of heuristics is to link the theory of mechanistic reductions with research on heuristics in psychology and the cognitive sciences. Drawing from research on bounded rationality and heuristics in human decision-making, Wimsatt (1986b, 2007) and Bechtel and Richardson (1993) have argued that the use of *reductionistic heuristics* is central to mechanistic explanations and inter-level reduction of complex phenomena. In contrast to the logicist models of inter-theoretic reduction that describe idealised reductions, these accounts emphasise that scientists must engage in heuristic-based reductionist strategies to mitigate the problem posed by the complexity of the phenomenon that they study. In contrast to "nothing but" reductionism, heuristic-based reductionism does not aim at omitting or eliminating the common sense description of the *explanandum* phenomenon (the "upper" level phenomenon). Heuristic-based reductionism aims to exhibit the mechanism that generates the *explanandum* phenomenon and its common sense descriptions.

A challenge here is the variety of conceptions of heuristics across research fields because the term *heuristic* is used under different interpretation in different fields of the biological, psychological, and cognitive sciences. In some contexts, the concept of heuristics refers to informal guidelines or "rules of thumb" that can help decision-making and the search for solutions. In other contexts, especially in artificial intelligence, the concept refers to formal procedures or inference rules or algorithms that can be implemented in computer programs.

3.5 Tracking and identifying heuristics in science

Wimsatt (1986b, 2006, 2007) proposes to analyse heuristics as general adaptive tools. He defines a *heuristic* as a "pattern for action" or a type of behaviour that is undertaken in a specific context to achieve an end, or as part of a larger plan designed to do so, and succeeds sufficiently frequently to justify its use (e.g., Wimsatt, 2006). Thus, Wimsatt's concept of heuristics refers to *adaptive tools* that must satisfy the context-specific constraints of a domain of use. The adaptive character of heuristics explains why they are widely adopted in particular sociocultural or scientific contexts, and can be combined in heuristic-combining methodologies to correct for biases and increase robustness. Heuristics in this general adaptive sense are not limited to simple reasoning shortcuts.

Following Wimsatt (2006: p. 464-466) and a number of related accounts (Hey, 2014; Nickles, 2015), we can specify at least five general properties of heuristics used in science. First, in contrast to truth-preserving algorithms, there cannot be a guarantee that heuristics will produce a truthful solution or the correct solution to a problem.

Second, heuristics are *economical* – or "cost-effective" – in terms of demands on both mental resources (e.g., working and long-term, memory, computation, or other limited psychological resources) and environmental resources (e.g., time available, tools available), under their (possibly incompletely specified) conditions of use.

Third, errors produced when using a heuristic tend to be the product of a *systematic bias*, which is often specific to a type of heuristic. Thus, errors generated by heuristics are not random errors. For example, Wimsatt (1980, 1986a, 1986b, 2007) has argued that reductionistic problem-solving heuristics often tend to underestimate or ignore the *effects of context*,[37] a point found in other contextualistic accounts (see chapter 5).[38] This aspect of

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[37] Wimsatt summarises the point as follows: "Decompositions with more solutions grab attention, and are more often overused (…). Powerful reductionistic problem-solving heuristics bias us towards underestimating or ignoring effects of context (…). We may accept "nothing but" statements which are really context-bound and approximate as if they were truly general and unqualified. Poorly chosen decompositions, or more commonly, good ones

heuristics is illustrated in Figure 2-3, which represents an idealised model of a mechanism. Following the localisation meta-heuristic, the model describes the causal interactions between two parts, components A and B, and omits the description of the manner in which component A is controlled by component C1 and exerts direct control over C2, which are parts of the *context* in which the interactions between A and B takes place. Because C1 can control the behaviour of A, the fact that the model omits the discussion of the causal control exerted by C1 on A counts as a systematic bias, a bias that neglects context-specific interactions.
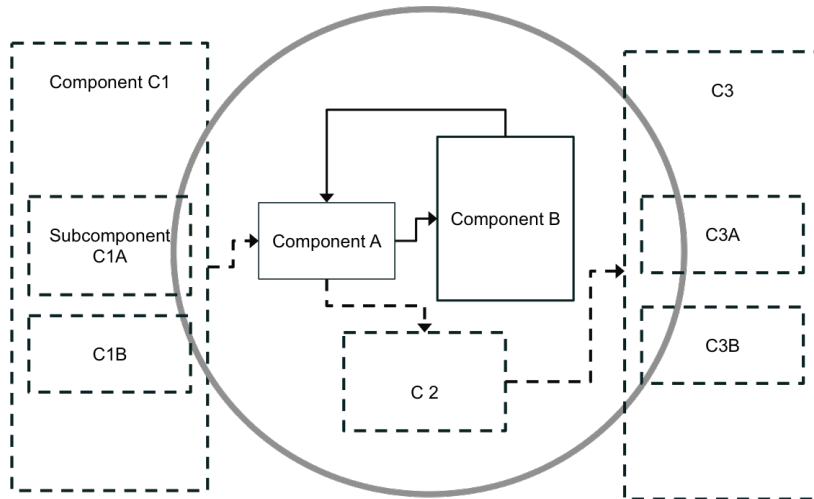
Figure 3-1 Components analysed and omitted by a reductionistic-mechanistic model, and bias of the neglect of context-specific interactions.
Arrows refer to relations of causal control between parts of a mechanism. Solid arrows and lines refer to components and activities that are described in the model. Dashed lines and arrows refer to components and arrows that are omitted in the model. The circle outlines the elements that are within the immediate focus of the model.

If one views a heuristic as a kind of mechanism, understanding how that heuristic mechanism works should allow one to predict the conditions under which it will fail, and the

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which are overused or overinterpreted, produce functional localization fallacies." (Wimsatt, 2006)

[38] See, for example, Fischer's (1971) analysis of the "reductive fallacy" (Fischer, 1971: p. 172-175).

conditions under which it can be made more reliable or robust. This systematicity of heuristic-generated errors may leave characteristic footprints providing clues to its use in the derivation of a result, and aid in reconstructing the inference.

Fourth, applying a heuristic to a problem *transforms the problem* into a non-equivalent but intuitively related problem. Because it is not the same problem, this transformation can lead to errors and confusions. Answers to the transformed problem may not be answers to the original problem. However, biases affecting learning and scientific practice may lead learners to ignore this possibility and assume that one has answered the original problem, leading to inflated or premature claims about the power of an approach. In other contexts the transformation may lead us to underestimate the creativity of a solution, thinking that it was already given or predetermined in the original problem formulation.

Fifth, heuristics tend to have *other heuristics as ancestors*, often modified or differentially specialised to work better in different contexts. Thus, heuristics commonly come in families or types, which may be drawn upon for other resources or tools appropriate for similar tasks. Heuristics may have descent or hierarchical relations.

Wimsatt (2006) analyses the nature and biases of several types of *reductionistic heuristics* that are used by scientists to reduce the complexity of the problems that they attempt to solve. These heuristics refer to identities and localization to generate inter-level accounts of upper level phenomena. The most often discussed reductionistic heuristics are related to localisations and decomposition strategies.

Robust reductionistic heuristics can be powerful and cost-effective problem-solver. However, like other heuristics, they can come at the cost of systematic biases.

3.6   Productivity and challenges of the use of reductionistic heuristics

Philosophers interested in reductionistic heuristics in the philosophy of science have investigated a variety of reductionistic approaches and topics in the biological sciences. However, to my knowledge, they have not investigated theories of person identification in the

biological and social sciences.[39] In the remainder of this chapter, I argue that the analysis of reductionistic heuristics can make two contributions to the foundations of the theory of person identification.

First, heuristic-based accounts of inter-level reduction provide a framework for understanding how heuristic-based strategies can contribute to the development of successful explanations of the phenomena of person identification and control. These accounts suggest a productive way to understand how researchers mitigate the challenges posed by the diversity and complexity of the phenomena of person identification. They suggest a way to understand both how scientists select the core *explananda* of the theory of person identification and how researchers develop explanations (*explanantia*) of these *explananda*. From the mechanistic standpoint adopted by inter-level mechanistic reduction, researchers have to address a series of basic identification and localisation questions to provide reductionistic accounts of person identification. These questions include: What are the heuristics that can help researchers describe the (mental or social) mechanisms that enable a learner's ability to identify a person? And, what are the components and processes of the mechanisms of person identification?

Second, heuristic-based accounts make the prediction that, like other heuristics, reductionistic heuristics can be systematically biased. This prediction is, I propose, helpful to understand how specific reductionistic heuristics have led research programmes on person identification to foster explanations that are biased, controversial, or sometimes fallacious. Understanding the origin of these biases and controversies can help us understand some of the factors that lead to the current disunity of the sciences of person identification.

The next sections will address these points in the context of a critique of specific research programmes in the sciences of person identification, which is focused on the recognition of faces.

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[39] The work I reviewed above by Wimsatt (1976, 2006, 2007) and Bechtel and Richardson (1993/2010) have not focused on the sciences of person identification.

4 Explanation and Biases in the Cognitive Sciences of Person Identification

Before analysing systematic biases that might have been induced by reductionistic heuristics in the theory of person identification, let us first examine a field wherein the use of reductionistic heuristics for theorising about person identification can be established with reasonable confidence. Examples are found, I propose, in the biological and psychological research on face recognition. Because the focus of these studies is the perception of faces, one may label this body of research as the *face-recognition research programme* (Bullot, 2014a). One of the strengths of this programme, I argue, has been to provide researchers with successful reductionistic heuristics for developing mechanistic explanations of face recognition and person identification. Let us now introduce several prominent contributions to the face-recognition programme (Bruce & Young, 1986; Calder, Rhodes, Johnson, & Haxby, 2011; J. V. Haxby, Hoffman, & Gobbini, 2000).

4.1 Reductionistic heuristics in Bruce and Young's (1986) model

Bruce and Young's (1986) theoretical framework (Figure 2-4) is a seminal contribution to the face-recognition programme. This framework has provided scholars with an influential conceptual model for developing mechanistic explanations of person identification and misidentification – in both neurologically typical[40] and clinical populations.[41] Although Bruce and Young (1986) do not describe their model as motivated by the search of reductionist

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[40] For further development of Bruce and Young's model, see Bruce and Young (Bruce & Young, 2012), Haxby et al. (Gobbini & Haxby, 2007; Haxby, Ishai, Chao, Ungerleider, & Martin, 2000; J. V. Haxby et al., 2000), and Bindemann and collaborators (Bindemann et al., 2012).

[41] Neurological models that belong to the descent of Bruce and Young's framework include Ellis and Young (e.g., Ellis & Young, 1990) and Breen et al. (Breen, Caine, & Coltheart, 2000).

heuristics, their scientific background (e.g., cognitive psychology, and the influence of Marr's (1982; 1978) framework), and the structural properties of their model are typical of a number of reductionistic heuristics aimed at formulating mechanistic explanations. This can be demonstrated by analysing some of the decision-points and assumptions that have led to the production of Bruce and Young's (1986) model.
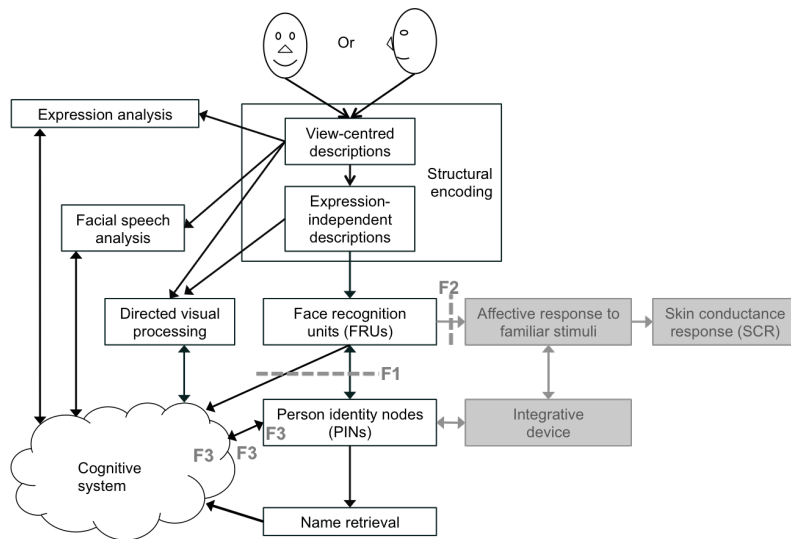
Figure 4-1 A mechanistic framework to study person recognition.
The schematic combines components from Bruce and Young's (1986) model and Langdon et al.'s (2014; see also Langdon 2011) account of the factors determining prosopagnosia (F1), Capgras delusion (F2), and Fregoli delusion (F3) (right-hand side boxes and grey arrows)

The core mechanistic decision made by Bruce and Young's (1986) is to assume the truth of the assumption of the decomposability of the recognition-identification system, which is an assumption that enables *meta-heuristics* such as the localisation heuristics (see above). Bruce and Young (1986) analyse face recognition as the *explanandum* phenomenon produced by a decomposable complex system, a system that satisfies the ontological criterion that Simon (1962, 1969/1996) refer to as *near-decomposability* and others as *decomposability of a complex system* (e.g., Bechtel & Richardson, 1993/2010: p. 37).

Beyond the assumptions of decomposability, however, the value of Bruce and Young's (1986) model is to outline hypotheses that engage more specific reductionistic heuristics. One of these heuristics is related to what Bechtel and Richardson (1993/2010) term the isolation of

the *locus of control*, which examine *what functions are performed* by a complex system and *what system or subsystem performs these functions*. Using reductionistic heuristics of decomposition and localisation, Bruce and Young's (1986) model proposes the hypothesis that the recognition-identification system performs a cluster of core *recognition-identification functions* that are associated with the skills and behaviours of person identification (i.e., the *explananda* of a theory of person identification). These functions include the capacities to match a face-stimulus with stored templates, engrams of biographical information in long-term memory, and representations for proper names. Roughly, the model distinguishes functions associated with four stages, which are illustrated in Figure 2-4.

First, social interactions lead to perceptual exposure to diverse views of familiar faces. This exposure triggers the encoding of invariant configurations of features, or *structural codes*, which can be contrasted with picture-specific or view-specific codes. Second, *face recognition units* (FRUs) assess the familiarity or resemblance of inputs provided by structural encoding, using a store of distinct structural codes. Third, representations of familiar faces stimulate information held by *person identity nodes* (PINs), which store semantic and biographical information that uniquely specifies each of the persons familiar to the agent. Fourth, the person identity nodes provide an input to linguistic processing for *name retrieval*. A number of other processes are performed by the *cognitive system*, the precise characteristics of which are left for further inquiry.

This account predicts that, in the context of ordinary social interactions, a typical human learner develops robust skills for identifying persons via the experience of recognising their faces (Bruce & Young, 1986; Young & Bruce, 2011). Thus, the model provides evidence for refining the face-recognition ⇨ person-identification heuristic discussed in chapter 2. To the phenomenological heuristic discussed above:

> "Face-recognition ⇨ person-identification" heuristic: if I have recognised a particular face *F*, then I have identified a person *P*.

The model suggests a reductionistic substitute based on an attempt to provide a mechanistic explanation, which may be summarised as follows:

"Face-recognition ⭢ person-identification" reductionistic heuristic: if a face recognition unit (FRU) and a person identity node (PIN) have matched a particular face *F* with stored biographical information, then the recognition-identification system has identified the bearer of *F*, person *P*.

Bruce and Young's (1986) decomposition of the recognition-identification system suggests several predictions that are broadly compatible with the heuristic that the behaviour of the system is explained by the causal relations between the parts of the system and the functions and activities that such parts perform. For example, Bruce and Young's (1986) model predicts that the recognition of familiar faces differs from the recognition of unfamiliar faces because it benefits from the processing of structural codes by the face recognition units and the biographical and contextual information made accessible by person identity nodes. This difference can account for the fact that participants in laboratory experiments perform face-recognition tasks better when they have to recognise familiar rather than unfamiliar faces (Young & Bruce, 2011). Bruce and Young's (1986) prediction that unfamiliar faces are more difficult to recognise also suggests a way to account for some errors in person identification, such as the difficulty that people experience when they have to recognise unfamiliar faces from images like photographs (e.g., the photographs of Will and William West; see, above, Figures 2-1 and 2-2) in photographic line-ups (Lampinen et al., 2012; Young & Bruce, 2011: p. 962).

4.2   Mechanistic predictions of person misidentification

The mechanistic character of Bruce and Young's (1986) model is apparent too in that it predicts that the disruption of recognition-identification functions from the disruption or failure of components and activities of the recognition-identification system. Such predictions have been developed in a neuropsychological tradition descended from Bruce and Young's (1986) model, which posits that *specific disorders* of person identification are caused by specific impairments to components and processes in the face recognition system. Several models that expand Bruce and Young's (1986) proposal in cognitive neuropsychiatry have

supported these predictions with clinical evidence (e.g., Ellis & Young, 1990; Ellis, Young, Quayle, & De Pauw, 1997; Langdon, 2011).

Based on a revision of the models proposed by Bruce and Young (1986) and Ellis and Young (1990), Langdon and colleagues (Langdon, 2011; Langdon et al., 2014) propose a dual-route model for explaining several disorders of person identification. The model predicts that some of the major misidentification delusions are caused by impairment of the mechanisms that control either overt face recognition (e.g., factors F1 and F3 in Figure 2-4) or covert face recognition (F2 in Figure 2-4).

Prosopagnosia, a syndrome in which a patient is unable to recognize previously familiar faces, is explained by a disconnect between face recognition units and person identity nodes (see F1). This disconnect prevents retrieval of names and biographic information, but it does not impact the covert face recognition associated with affective processing.

Capgras delusional syndrome, in which a patient adopts the delusional belief that a loved one has been replaced by a look-alike impostor, derives from an impairment to covert recognition (see F2; supporting evidence is reviewed in, e.g., Ellis & Young, 1990; Ellis et al., 1997; Gobbini & Haxby, 2007).

Finally, in the case of *Fregoli delusional syndrome*, a delusion in which the patient misidentifies a stranger as a known person in disguise, the delusion derives from the propensity of an impaired "cognitive system" to over-excite certain person identity nodes – see Langdon et al. (2014) for a critical review of the evidence that supports this explanation.

4.3   Reductionistic heuristics in neuroscientific models of face recognition

Although Bruce and Young's (1986) model and those descended from their framework use mechanistic heuristics, these models should not be viewed as fully mechanistic because they provide only the sketch of an inter-level mechanistic reduction of recognition-identification phenomena. The core reason why Bruce and Young's (1986) is merely the sketch of a mechanistic explanation is that the model does not provide a detailed description of the identity and localisation of the biological, brain, and social mechanisms that perform the

functions posited by the model. For example, although the 1986 model specifies functional components such as face recognition units (FRUs) and person identification nodes (PINs), the model has neither identified nor localised the components that perform such functions.

The omission of the discussion of the identity and localisation of the components that perform identification functions leaves open a number of questions that a mechanistic explanation needs to address. For example, what are the brain systems that function as face recognition units and person identification nodes? Where are these mechanisms located? What are the relations between the brain mechanisms that perform recognition-identification functions and the social mechanisms that support person identification? Because Bruce and Young's (1986) model does not provide answers to these questions about the nature of the mechanism, the model corresponds to an incomplete model of a mechanism, a type of explanation that Craver (2007) has termed a *mechanism sketch*.

Since the introduction of Bruce and Young's (1986) model and other seminal works about face and person recognition, researchers from the face-recognition programme have provided new models that attempt to address some of the questions left unanswered by Bruce and Young's (1986) model. In particular, researchers in cognitive neuroscience have introduced models that, following the localisation meta-heuristic, describe and locate brain mechanisms that perform functions associated with face recognition units or person identity nodes. In that tradition, Gobbini and Haxby's (2007) model, which expands Haxby and collaborators' earlier models (J. V. Haxby et al., 2001; J. V. Haxby et al., 2000), describes and locates two interconnected brain networks (Figure 2-5).
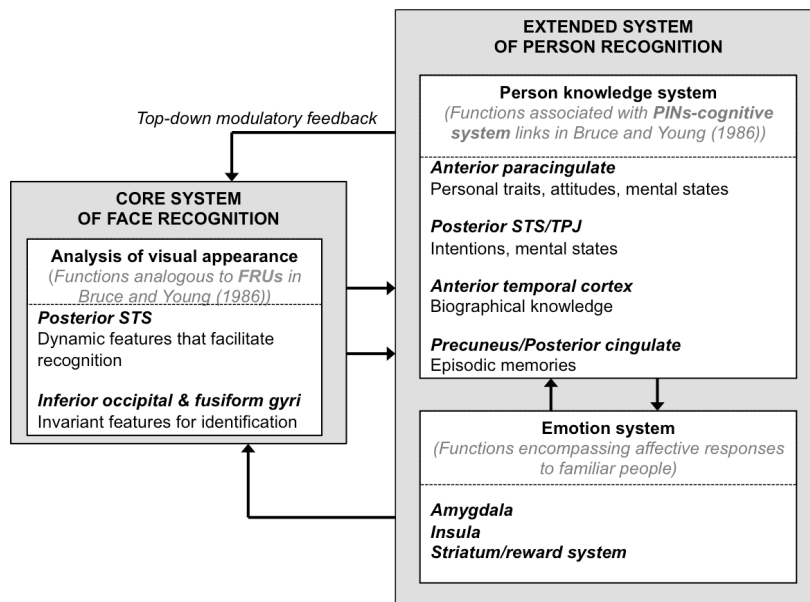
Figure 4-2 Outline of Gobbini and Haxby's (2007) model of face recognition and person recognition of familiar persons redrawn with points of comparison with Bruce and Young (1986)

The first network is a *core system* that encodes the visual appearance of faces, performing functions traditionally associated with face recognition units (FRUs) in Bruce and Young's (1986) model. Parts of the core system are located in the lateral fusiform gyrus, or fusiform face area (FFA) (Kanwisher et al., 1997), which "is involved more in the representation of invariant features of faces and, therefore, presumably plays a role in the recognition of familiar identities" (Gobbini & Haxby, 2007: p. 37).

The second brain network is an *extended system* that includes a mechanism for *person knowledge*, which performs functions associated with person identity nodes and the "cognitive system" in Bruce and Young (1986), including the representation of personal traits, mental states, biographical information, and episodic memories.

As in many other models from cognitive neuroscience, Gobbini and Haxby assume the decomposability of the recognition-identification system and deploy the meta-heuristic of decomposition and localisation.

4.4   Individualistic and universalistic strategies or meta-heuristics

If my analysis is correct, the methodology of the reviewed contributions to the face-recognition programme is tied to core mechanistic commitments. First, these contributions propose a series of *mechanistic* sketches or models of the recognition-identification system. Although these models are not comprehensive mechanistic models of person-identification phenomena, the sketches have produced testable predictions about the mechanisms that control person identification, and the disruptions that can elicit errors in person identification and delusional misidentification.

Second, the discussion has provided support for the idea that the elaboration of these sketches and models derives from the deployment of a variety of *reductionistic heuristics*. Among other reductionistic heuristics, several hypotheses expressed in these models reflect the pervasive guidance of the *decomposition-and-localisation* strategy (or meta-heuristic). One of the advantages of such a strategy is that it has permitted the integration of behavioural and neuroscientific evidence. This integration is exemplified in the integration of Bruce and Young's (1986) model within Gobbini and Haxby's (2007) model (Figure 4-2).

Third, Bruce and Young's (1986) description of the decomposable recognition-identification system adopts a heuristic strategy – or meta-heuristic – that presents the signature traits of an individualistic methodology, and might even be assuming an individualistic metaphysics of the mental states of identification. A psychological theory adopts an *individualistic methodology* if it holds that the mental states and computations of the mechanism under study can be individuated or classified without reference to the environment and sociocultural context of the learner. Jerry Fodor has coined this type of approach *methodological solipsism* (Fodor, 1980) and defended it as a research strategy in psychology, which differs from other defences of *methodological individualism* in the social sciences (Elster, 1982; Heath, 2005/2015).[42] Bruce and Young's (1986) model follows an individualistic heuristic strategy in that sense because the recognition and identification

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[42] On methodological individualism in general, see, for example, Danto (1963/1966).

processes performed by the system described by their model are individuated or classified without reference to a rich understanding of the learner's environment and sociocultural context.

In addition to its methodological individualism, Bruce and Young's (1986) model is consistent with an *ontological* commitment typically associated with individualism, which is to posit that mental states and computations supervene on the intrinsic, physical, and organismic states of the individual who instantiates these states and computations (see Wilson, 2004). Thus, it is plausible that one of the core reductionistic heuristics that guide these models from the face-recognition program is an individualist meta-heuristic. Specifically, it is the guiding principle that the realisation of the mental states and computation of recognition-identification supervene on the intrinsic, physical, and organismic states of the individual who instantiates these states and computations.

One of the marks of the individualistic heuristics adopted by models in the face-recognition programme is that such models omit the analysis of the role of contextual factors that are part of the learner's sociocultural and historical environment. Such models are typically *universalist* in the sense that these adopt *universalistic heuristics*, heuristics which tend to assume or seek evidence that the mental mechanisms posited by the models are parts of a stable universal architecture of the human mind and brain (Bullot, 2015). Apparently, the authors of the models leave to researchers from other fields of the social sciences the tasks of explaining the interactions between mental mechanisms specialised for person identification and social and cultural contexts. For example, in contrast to theories of identification that take into account the role of causal reasoning and cultural scaffolds in person identification (see below, and chapter 3), neither Bruce and Young's (1986) nor Gobbini and Haxby (2007) include causal-historical and contextual reasoning among the core mechanisms for person identification (Bullot, 2014a). Nor do they provide any discussion of the potential influence of cultural learning on identification processes.

Although the face-recognition programme is a productive programme of scientific research, I wish now to argue that some of the reductionistic heuristics that have been adopted

in this programme presents systematic biases, and that analysing such biases can help us provide a foundation for an integrative theory of person identification.

4.5   Individualistic and other biases of the face-recognition programme[43]

From the hypothesis that the use of heuristics generates biases (section 2.2) and the evidence that models of face-recognition use heuristics (section 2.3), one can predict that heuristic-based models of face recognition should present systematic biases. In this section, I attempt to characterise some of the systematic biases of these reductionist heuristics from the perspective of our search for an integrative theory of person identification. I should concede at the outset that the face-recognition programme was not initially devised to provide a foundation for a comprehensive theory of person identification. However, there are two reasons to think that the face-recognition programme might be crucial to a comprehensive theory of person identification.

First, although the mechanisms of face recognition are the main focus of the programme, Bruce and Young's (1986) model and the models descended from similar conceptual frameworks have demonstrated in a variety of ways that face recognition is a crucial condition of person identification. Thus, the face-recognition programme provides a variety of ways to provide theoretical refinements for the "face-recognition → person-identification" heuristic discussed above.

Second, the face-recognition programme is currently expanding into an integrative science of *person perception* (Calder et al., 2011; Young & Bruce, 2011). This extension might lead some researchers to conclude that the programme's focus on face recognition provides an adequate framework for developing an integrative theory of both person perception and person identification. However, I have argued that we should resist this conclusion because the programme's reductionistic and individualistic heuristics has tended to yield a biased and incomplete image of person identification (Bullot, 2014a). In this section,

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[43] This section includes a revision of a series of arguments that I have initially outlined in Bullot (2014a).

to refine and expand the arguments that I have proposed to support this analysis, I propose to specify a number of systematic biases in the face recognition programme.

The argument from broad identification and identification judgment

A simple idea implies the incompleteness of the heuristics that guide the face-recognition programme. This idea is that any integrative interpretations of the concept of *person identification* must encompass a broader set of skills and behaviours than those skills driven by the perceptual recognition of a target's organism described by the individualistic models of the face-recognition programme. From the standpoint of mechanistic analysis, this idea is germane to the claim that the face-recognition system is just a part of the person-identification system, which includes other types of identification mechanisms that have not been investigated by the face-recognition programme. Thus, the models I have considered from the face-recognition programme are analogous to the model described in Figure 2-3: these models have omitted to represent important parts of the mechanism of person identification and its historical and social contexts.

Consider a learner's ability to form *identification judgments* about self and other persons. A number of philosophers[44] and psychologists[45] agree that an integrative conception of the cognitive skills of identification has to include the ability to form and understand *identification judgements*. The ability to form identification judgments enables the capacity to entertain true thoughts or beliefs about individuals, which are termed *singular thoughts* in philosophy of language (G. Evans, 1982; Jeshion, 2010). If one transposes this conception of identification to the domain of person identification, it suggests that the ability of assembling identification judgements about a target person's identity is a core cognitive skill pertaining to person-identification.

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[44] In philosophy, see, for example, Strawson (1959), Evans (1982), and the essays collected in Jeshion (2010).

[45] In psychology, see, for example, Barsalou, Huttenlocher, and Lamberts (1998), Gelman (2003), Rips, Blok, and Newman (2006), Bloom (2010).

If we agree that identification judgements partake in person-identification, then we have to take into account that identification judgements about persons can refer to target persons that are either temporarily *unperceived* (e.g., someone out of sight) or in principle *unobservable* (e.g., someone who died centuries ago). To form identification judgments about unperceived and unobservable targets, a learner can only exploit *indirect sources* of evidence such as material traces, symbols, narratives (e.g., testimonies), pictorial representations (e.g., a video stream on an Internet social network), and theories that make predictions relevant to identification. Thus, if a learner's target for identification is not directly observable because the target's organism is situated at a remote place, disguised, or decomposed after death, the learner must resort to identification strategies that do not use the direct perceptual recognition of the target. Consequently, the heuristic that face-recognition is a necessary condition of person-identification (face-recognition → person-identification) is falsified at least by the fact that person identification (in the broad sense) can occur in absence of face recognition. Let us make this argument more concrete with a series of examples.

Scholars who seek to account for the history of past social events and the biographies of deceased individuals, for example, have to identify human agents without having the means to be perceptually acquainted with such people. An illustration of such non-perceptual mode of identification is the identification of Richard III of England's remains with bones discovered at Leicester in 2012 (Buckley et al., 2013; Mitchell, Yeh, Appleby, & Buckley, 2013). This identification resulted from the researchers' causal-historical reasoning about multiple sources of evidence, which has included (i) historical texts and narratives that refer to Richard III's life and burial site, (ii) non-textual artefacts and material traces or sites (e.g., the burial site) that are interpreted as having significant causal or representational relations with Richard III (e.g., a painting that depicts Richard III), (iii) the bones retrieved at the excavation site that provide organic material for structural and DNA analysis along with radiocarbon dating.

The identification judgments held by researchers involved in Richard III's case may have conformed to structures like these:

The narrative in this text "…[*text containing a description including words such as "Richard III"*]" refers to Richard III.

The portrait [*demonstrative reference to the face depicted by a historical painting*] is a depiction of Richard III.

These bones [*demonstrative reference to (photographs of) bones excavated in Leicester in 2012*] are the remnants of Richard III.

Note that these identification judgments assume that the proper name "Richard III" refers to different stages of the existence of a biological individual. The existence of a biological individual involves a series of typical biological events associated with the cycles and mechanisms of life (Wilson, 2005; Wilson & Barker, 2007/2013; Wilson, Barker, & Brigandt, 2007), which include mechanisms regulating the fertilisation of an egg, birth, development, aging, death, and the persistence of bones after the decomposition of softer tissues after burial. The models of the face-recognition programme I reviewed have not investigated this kind of identification; and it is unclear how such models would account for cases such as the identification of Richard III.

This type of example is not unique to person-identification as it is conducted in archaeology. Person-identification of unperceived or unobservable target also occurs when a learner begins searching for a target at a location where a living target person is absent. Police detectives are often placed in that situation when instigating the search for a perpetrator at a crime scene. Typically, detectives have to rely on methods of indirect identification, such as eyewitness testimonies (Lampinen et al., 2012) and causal or abductive inferences from material traces such as DNA evidence and latent fingerprints (S. A. Cole, 2001). As I discussed above while considering the Will West case, these methods of forensic identification often rely on technologies that are found in a limited number of historical and cultural contexts. It is plausible that the individualistic meta-heuristics that guide the models of the face-recognition programme I reviewed direct the attention of researchers away from the study of these context-specific methods of identification.

The argument from discriminative identification and causal history

Another source of evidence about the limitations of face and organism recognition for person identification relates to identification understood as *discriminative identification*, which is the ability to discriminate a target from other objects that appear similar or indiscernible and acquire knowledge about that target (Bullot & Rysiew, 2007; G. Evans, 1982). Even in circumstances where a learner is in a position to perceive a target's organism, an *argument from the tracking of causal histories* leads to the conclusion that perceptual recognition does not entail discriminative identification.

The argument relies on the following premises:

1. Uniqueness of an individual's causal history. To perform the discriminative identification of a target, a learner needs to have the ability to track the target's *unique causal history*, which is the series of causal facts and interactions that distinguishes the target from any other object or agent.

2. Historical and causal indeterminacy in perceptual recognition. Mechanisms for the perceptual recognition of a target's face or body do not provide the learner with an ability to track the target's causal history.

Both premises are credible; and it follows from them that perceptual recognition mechanisms alone would not provide a tracker with an ability to perform the discriminative identification of a target reliably.

The Will West case along with other cases of person misidentification derived from errors in face recognition (section 2.1) provide historical and anecdotal evidence that is consistent with the second premise. In the West story, the clerk initially misidentified Will West for William West because the clerk's mechanism for visual recognition was fooled by the resemblance between the two individuals. As I noted above, this type of recognition-based misidentification is common. It is a crucial reason why we should not equate a recognitional match (e.g., activation of a network of face recognition units and person identification nodes by a face) with a robust act of person identification. The uncertainty is pervasive in face recognition.

One of the theoretical reasons that support the second premise can be illustrated by the mechanism linking face recognition units and person identity nodes, which is posited by Bruce and Young's (1986) theory of person recognition and several of its successors (Figures 2-4 and 2-5). This mechanism encodes structural differences among faces taken as input to the mechanism for discriminating individual persons. Because it relies on an organism's visual appearances only, the mechanism alone does not have the discriminative power to differentiate perceptually indiscernible people who have different causal histories such as a number of monozygotic twins (Segal, 1999/2000), accidentally similar people (e.g., Will and William West), and impersonators (Bullot, 2015). Consequently, because it lacks contextual information about the distinct causal histories of indiscernible people, the mechanism will tend to generate (borrowing the concepts of signal detection theory) "false positive" and "miss" errors when attempting to identify indiscernible people with distinct causal histories. There is considerable evidence demonstrating that mistakes in eyewitness identification often involve such false positive and miss errors in perceptual recognition (see, above, and Lampinen et al., 2012), which can only be overcome by reliable causal-historical reasoning. In the case of Martin Guerre (section 2.1), for example, historical evidence suggests that numerous villagers who were given the task of identifying New Martin by the judges made false-positive identifications (Coras, 1561; Davis, 1983).

The argument from the tracking of psychological/mental histories

Researchers have also to take into account an *argument from the tracking of psychological histories*, which focuses on the "mindreading" ability to ascribe, track and understand a target's mentality and personality – an ability also referred to as "theory of mind" or "mentalising" (Apperly & Butterfill, 2009; Bombari et al., 2013; Gergely & Csibra, 2003; Heyes & Frith, 2014). Psychological tracking is at the very least relevant, and perhaps sometimes necessary,[46] for identifying a person.

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[46] Brook (2014) defends the controversial claim that psychological tracking is necessary for, and the most significant condition of person identification. Brook's view derives from the

Although facial expressions can produce clues relevant to psychological tracking (Porter & ten Brinke, 2010), humans are unable to directly observe and recognise mental characteristics such as the target's autobiographical memory, feelings, and trustworthiness in contexts involving complex social interactions such as deception (Ekman, 1996; Porter & ten Brinke, 2010), social power (Bombari et al., 2013), and "scaffolded" cooperative cognition (Sterelny, 2012; Sutton, 2010; Tomasello, 1999). For example, to learn about a target's complex mental and personality traits, such as New Martin's untrustworthiness (Martin Guerre's impersonator, Arnaud du Tilh), a learner needs to learn facts about New-Martin's psychological history that cannot be directly observed. The fact that these psychological phenomena are unobservable highlights the limitations of perceptual recognition. In a competitive social world where agents can deceive, tracking a target's mental characteristics such as the target's trustworthiness requires a flexible, late-developing, and educated system[47] for understanding minds, a system that can appeal to evidence-based reasoning about the target's unobservable causal history. The individualistic heuristics that guide the methodology of Bruce and Young's (1986) and Gobbini and Haxby's (2007) models tend to omit the consideration of these social phenomena.

The argument from cooperative tracking and identification of persons

The arguments from the tracking of causal and psychological histories are important because, as I noted above in my discussion of deceptive impersonation (section 1), human agents live in social contexts where the confounding appearances of deceivers and "free riders" (agents who seek social benefits without paying for the costs of such benefits) are a threat for core human institutions based on trust such as social justice and cooperation. Because deceiving impostors and other deceivers raise fundamental social "free rider" problems, human learners need an ability to discriminate between agents who act as genuine

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endorsement of the psychological view of the ontology of the human person (i.e., the view that a human persons is, roughly, a continuous series of mental states).

[47] See Apperly and Butterfill (2009) and Heyes and Frith (2014) for analyses of the contrast between early-developing and late-developing or culturally learned mindreading mechanisms.

cooperators and those who act as deceivers and free riders (e.g., Arnaud du Tilh). The latter discrimination requires that learners can robustly track important aspects of the causal and psychological histories of other persons, and avoids misidentifications that make deception possible. The problem is that such tracking might require cooperation. Such considerations lead to an *argument from cooperative tracking and person identification*, which highlights an important limitation of individualistic heuristics and strategies.

Because discriminative identification can be highly challenging for an isolated individual learner, humans sometimes develop cooperative methods for identifying people. The latter include the cooperative methods for organism-specific tracking and identification used in forensic contexts (section 2.1). Biased by individualistic strategies and meta-heuristics, the models of person recognition described above have not sought to explain how such cooperative methods can expand and modulate processes performed by the mechanisms of person identification. Likewise, they have not sought to account for the fact that person identification is a prerequisite of a variety of practices involving social cooperation such as authenticating the alleged identity of someone (e.g., unmasking an impersonator), attributing moral and legal responsibility, enforcing commitments and rights, and gathering surveillance data about people from social networks (Nissenbaum, 2010).

The argument from the ontology of personal identity and persistence

Finally, an argument *from the concepts of personal identity and persistence* reveals another limitation of the face-recognition programme. According to the models discussed in section 2, face recognition is essentially linked to the tracker's knowledge of "a person's identity". The evidence for this comes from the use of the concept of person identity node (PIN). However, it is difficult to interpret what these models imply when they refer to the concept of a person's "identity" because neither Bruce and Young (1986) nor Gobbini and Haxby (2007) provide an explicit analysis of this concept.

Bruce and Young (1986), for example, write that they "are also using face recognition to include what might well be called identification or retrieval of personal information" (p. 305). Thus, in their account, "identification" refers to the retrieval of information about a person's

identity. However, the authors do not provide a specification of the concepts of a person's identity and personal information. Psychological research on eyewitness identification (e.g., Lampinen et al., 2012) and interpersonal sensitivity (Bombari et al., 2013) tends to overlook this question as well, although the question of personal identity is fundamental to ethical and legal problems associated with person identification. In contrast to these theories, I argue below that the analysis of a tracker's conceptions of a target person's persistence and causal organization is relevant to a theory of person identification.

The analysis of the concept of "personal identity" raises in fact several ontological problems of personal identity, which have been investigated by philosophers from a variety of traditions. For example, a problem of personal identity that is closely tied to research on tracking is the *persistence question* (Olson, 2002/2010), also known as the *reidentification question*, which queries what makes a person at time t_0 the same person as a person at time t_{-1} and/or time t_{+1}. The philosophical theories that address the persistence question have investigated a wide range of criteria for personal persistence, including causal contiguity (Nozick, 1981; Rips et al., 2006), organismic continuity (DeGrazia, 2005; Wilson & Barker, 2007/2013), and psychological connectedness (e.g., Parfit, 1984; Shoemaker, 1984).

4.6   Recapitulation, on scientists and complexity

Let us recapitulate. I have begun our enquiry by considering a series of puzzling phenomena that have been studied, or might deserve to be examined as *explananda* of a theory of person identification. These phenomena include the phenomenology of the experience of recognising an acquaintance's face, the identification and misidentification of look-alikes, and the challenge of identifying deceivers and impersonators. All these examples illustrate the complexity and diversity of the phenomena of person identification. This complexity raises a basic methodological challenge: how do researchers seeking to explain person-identification phenomena tackle or resolve the problem posed by the complexity of such phenomena?

To address the question of complexity, I have argued that, like other decision-makers facing complexity, scientists and social researchers who study person identification have recourse to a variety of heuristics; in particular, they use first-order heuristics (simple or cost-

effective decision-making procedures) and meta-heuristics (second-order heuristic or strategies for assessing first-order heuristics). Philosophers of science have proposed conceptual models that can help us understand the use of first and second-order heuristics in the history of scientific practices, and most particularly in the history of mechanistic reductions in the biological sciences.

The heuristic-based approach I have outlined can help us assess the virtues and biases of research programmes on person identification. To illustrate the role of reductionistic heuristics in shaping scientific research on person identification, I have critically assessed a sample of research on person identification. Specifically, I have started my examination from psychological and neuroscientific models of face recognition (the face-recognition programme), which posit that the mechanisms for the recognition of familiar and unfamiliar faces are essential to person identification. I have presented evidence that several influential models from this programme have deployed reductionistic heuristics. In particular, I have analysed the use of three types of reductionistic heuristics: the heuristic of decomposition and localisation and the meta-heuristics of methodological individualism and methodological universalism.

The theory of reductionistic heuristics in research practice predicts that the use of a heuristic can bias the thinker's reasoning, leading to omissions in explanation or erroneous conclusions. Evidence supports this prediction in the corpus of research conducted on person identification. In respect to biological and psychological models of person identification, there is evidence that prominent models of the face-recognition programme are biases by the meta-heuristics of methodological individualism and universalism. Specifically, I have proposed several arguments that establish that systematic biases or limitations have led researchers from the face-recognition programme to omit the study of important phenomena of person identification. For example, individualistic theories that prioritise the study of perceptual recognition of faces or organisms are incomplete because they do not account for important identification phenomena such as the capacity to identify unobservable persons or agents concealing their identities. Overall, the biases induced by individualist accounts include, among other limitations, the omissions of discriminative identification, causal-historical

reasoning for person identification, culturally inherited and cooperative identification of persons, and the historical ontology and social epistemology[48] of person identification (Bullot, 2015). Thus, although the face-recognition programme is highly productive as a scientific framework, the programme is unlikely to provide a complete account of person-identification. There is more to human person identification than behaviours driven by perceptual recognition.

The broad concept of person identification

It is a consequence of my critical analysis of the theories of person identification that researchers seeking to contribute to an integrative theory of person identification have to nurture a *broad conception of person identification*. Researchers tend to opt use heuristics in the study of person identification that prioritise either the perceptual recognition of a person (this is the face-recognition programme) or the formation of identification judgements and singular thoughts. In contrast to models that are biased toward narrow concepts of identification, the analysis that I outlined suggest the need of a broad and non-individualistic conception of person identification acknowledging both the psychological regularity and sociocultural diversity of person-identification phenomena. That is, we need a conception that can do justice to the insights provided by both universalistic and contextualist meta-heuristics for the study of the variety of processes of individual and cultural learning that permit us to track, recognise, authenticate, and reason about the identities and persistence of persons or

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[48] For example, both the cases of unexpected similarities (e.g., the Will West case and similar cases) and the cases of imposters' deliberate identity concealment (e.g., the Martin Guerre case and similar deception cases) direct our attention to epistemological questions about fallibility and robustness in person identification that have rarely been investigated – see next chapter and (Bullot, 2015). Epistemological questions include these: what are the factors that contribute to the reliability or fallibility of identification mechanisms? How do human learners form true and false identification judgments about other persons? Should we count as genuine cases of person identification the cases where identification is successful? If yes, what is going to determine success in identification? By contrast, should we instead consider that both erroneous and successful acts of identifying persons are cases of person identification which should be taken as explananda of an integrative theory of person identification?

groups of persons. Only a broad conception of person identification can account for the major social and cultural significance of the identification and tracking of persons. Only such a broad conception can account for the fact that the most fundamental social mechanisms that regulate the organisation of human societies rely on person identification – because human learners constantly need to be able to track their own identity and the identities of others, using both individual and group levels of representation.

5 Contextualism and Person Identification

In chapter 4, I examined several reductionistic and mechanistic theories of person identification in the psychological and cognitive sciences, finding that many of the core research strategies adopted by these theories are biased in that they systematically screen out significant contextual factors. For example, reductionistic psychological theories guided by individualistic methodologies typically screen out cultural and cooperative practices that, nonetheless, contribute to shaping person-identification behaviours. In this chapter, I propose a new analysis, a correlate of the previous analysis of reductionistic theories of person identification. I argue that researchers from the social sciences and the humanities primarily adopt *contextualistic* heuristics in their studies of human behaviour and person identification, and that there are tensions and antagonisms between these contextualistic approaches and the reductionistic theories from the cognitive sciences. Instead of considering contextual variability as a factor that can be screened out in the reductionistic quest for universal mechanisms, contextualistic theories have tended to take behavioural variability across historical and sociocultural contexts as a core factor that either pertains to person-identification phenomena, or explains fundamental aspects of such phenomena. The argument I propose to support this view is organised in three steps. I first present influential examples of contextualistic heuristics, including theories of cultural understanding of social practices by means of contextualised "thick" and "idiographic" descriptions. Next, I expound arguments that support the use of contextualistic heuristics in the sciences of person identification. To explain some of the antagonisms between contextualistic and reductionistic research strategies, I then discuss objections to contextualistic research strategies by advocates of reductionistic strategies. The chief aim of the next chapters is to define research strategies that can resolve at least some problems associated with these antagonisms.

5.1 The hypothesis of contextualistic heuristics

To commence the work for justifying my analysis, one needs to demonstrate that the research work of numerous scholars from social sciences and the humanities is guided by *contextualistic* heuristics. This hypothesis requires some elaboration because, to my knowledge, the hypothesis is new. Contextualists do not typically describe their research strategies as guided contextualistic heuristics. As explained in earlier chapters, however, there is reason to conceive heuristics as very pervasive and general tools for thinking and making decision in challenging contexts. In the analysis I defend, heuristics are patterns of action and thinking that help learners make decisions in contexts where these learners meet uncertainty and complexity. Both learners guided by common sense and experts guided by folkloric or scientific theories use heuristics, although the contents of such heuristics may differ.

Philosophers of science and cognitive scientists have described and evaluated a variety of reductionistic heuristics that guide scientists' decision-making. A common bias of such reductionistic heuristics, such as the heuristic of decomposition-and-localisation, is to screen out or underestimate the causal contributions of components within the context of the investigated system – see chapter 3 for details. If many reductionistic heuristics are poorly suited for learning contextual information, then we could conjecture that learners also use heuristics aimed at facilitating contextualised thinking and decision-making. It is possible that learners seeking to expand their contextual knowledge of a situation have recourse to a family of decision-making processes that can enhance the learning of contextual information. Thus, I propose to use the expression *contextualistic heuristic* to refer to a pattern of action and thinking (e.g., a rule of thumb, a research strategy) aimed at facilitating a learner's sensitivity to a context relevant to the performance of one of the learner's task or decision.

As noted in chapter 3, first-order heuristics understood as simple patterns of action and thinking for decision-making need to be distinguished from meta-heuristics understood as research strategies aimed at assessing first-order heuristics. Thus, if first-order contextualistic heuristics are possible, then we should also acknowledge the possibility of second-order

contextualistic heuristics (i.e., *contextualistic meta-heuristics* used to evaluate the explanatory virtues of contextualistic first-order heuristics).

Contextualistic heuristics and meta-heuristics, I argue, are more than a mere possibility: such heuristics are fundamental parts of the history of idiographic, causal, and normative thought. To provide support for this claim, I now turn to a series of examples illustrating forms of thinking that qualify as contextualistic heuristics.

5.2 "Thick" descriptions and arguments from look-alikes

The analysis of "thick" descriptions of human behaviour provides illustrative examples of contextualistic heuristics. The distinction between "thick" and "thin" descriptions and concepts has become a popular heuristic tool in social and humanistic disciplines, which ranges from philosophy[49] (Ryle, 1968a, 1968b, 1971/2009; Walzer, 1994; B. Williams, 1995) to political history (Goldhagen, 1996) and anthropology (Geertz, 1973; Hinton, 2004). Here, I consider arguments developed in Gilbert Ryle's analysis of thinking (Ryle, 1968a, 1968b, 1971/2009) and Clifford Geertz's (1973) approach to ethnography.

Geertz (1973) defends the view that ethnographic understanding derives from the use and construction of "thick descriptions." A description of a phenomenon is thick, in Geertz's sense, when it is culturally informed and contextualised (Alexander, 2008). To introduce the concept of thick description, Geertz uses an argument from look-alikes introduced by Ryle (1968a, 1968b). As noted in the preceding chapter, arguments from look-alikes and indiscernibles are used by contextualists to emphasise the limitations of reductionistic theories of the identification and understanding of persons (Bullot, 2014a) and artefacts (Bullot & Reber, 2013a; Danto, 1981; Schwartz, 1998).

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[49] In addition to Ryle's papers discussed in this section, the distinction between "thick" and "thin" concepts is commonly used in moral and political philosophy, where it was introduced by Bernard Williams (1985/2006) in his contextualistic critique of moral philosophy. The distinction is a important conceptual tool for contextualistic theories of moral and political phenomena (MacIntyre, 1981/2007; Taylor, 1989; Walzer, 1977/2006, 1983, 1994; B. Williams, 1995).

Scenario of the four look-alike eyelid movements

One of the core arguments in support of thick descriptions methodologies, which was introduced by Ryle (1968a, 1968b) and was considerably expanded by Geertz (1973), is an *argument from look-alike behavioural events*. This type of argument refers to behaviours that differ in significance and social functions in spite of displaying confusing similarity in appearance. In Ryle's (1968b, 1971/2009) version, which was reprised and expanded by Geertz (1973), the argument is elaborated from the analysis of a scenario in several boys rapidly contract the eyelids of their right eyes in different circumstances, which may be summarised as follows:

> Scenario of the look-alike eyelid movements: The movement performed by the first boy (*the twitcher*) is an involuntary *twitch*. In contrast, the second boy (*the winker*) performs a conspiratorial *wink*. He deliberately closes his right eyelid to wink and communicate a signal to an accomplice. Then, a third boy (*the parodist*) performs a parody of the second boy's wink – doing so after rehearsing, alone, his comical wink in front of a mirror (acting as *the rehearser*).

Although these eyelid movements are not identical,[50] these movements are nonetheless *look-alikes*. That is, they are events that would visually appear alike – of the same socially undifferentiated type – to any witnesses who would be unaware of their contextual peculiarities and concealed social functions. For example, the comparison of a mere set of

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[50] Geertz (1973) writes that these movements are "as movements, identical" (p. 6). This claim is erroneous. In the scenario, the boy's eye movements are neither identical as tokens nor identical as types. These movements are not identical tokens because their spatiotemporal locations, causal histories, and performers are indubitably different. Moreover, the movements are unlikely to be identical as a type because it is plausible that there are major timing, muscular, and other physiological differences between involuntary types and (genuine, pretended, rehearsed) voluntary types of eye blinks. Geertz seems to assume that the movements are "identical" for the sake of argument, but such a "thinning" move is confusing because it contravenes to the spirit of the argument, which defends the advantages of "thickening" the description of social phenomena. Thus, the argument is stronger and more general if one adopts the interpretation I propose, which only requires that we interpret such movements as look-alikes.

photographs of each of these movements would not reveal their differences in social significance. However, although the boys' movements look similar, the contextual significance of their movements varies as a function of characteristics unique to each context-specific performance.

According to the conceptual analysis first used by Ryle (1968b, 1971/2009) and then expanded by Geertz (1973), a *thin description* of what the winker – or the twitcher, parodist, rehearser – is doing consists in a statement such as "he is rapidly contracting his right eyelids" or "he is briefly closing his right eye." That is, although it is not false, a thin description is an account limited to the ostensible *surface* of a behavioural performance. Using the concepts of sensitivity and tracking that I defend further in the next chapter, a thin description of an agent's performance is an account that is *not sensitive to* – does not track – that performance's social significance and function. In the winker's case, it would be a description that omits to refer to the status of the performance as a communicative signal.

On the parodist's rehearsal, and laying the ground for a contextualistic critique of reductionism, Geertz notes that

> so far as what a camera, a radical behaviourist, or a believer in protocol sentences would record he is just rapidly contracting his right eyelids like all the others. (p. 7)

This is to suggest that, on Geertz's view, reductionistic forms of behaviourism (e.g., Skinner, 1938) or logical positivism (e.g., Carnap, 1932/1987) are limited to providing thin descriptions of human cultural behaviour. This corresponds to Geertz's *objection from thinness* against reductionistic heuristics.

By contrast to the shallowness of a thin description, the function of a *thick description* is to track and identify the depth of an event's significance and of its social meaningfulness. The *twitcher's eye movement*, for example, is merely an involuntarily contraction, and should not be counted as a social action. A thick description of that motor sequence needs to account for its involuntary character, as in "that boy contracted his eyelids involuntary, and his movement should not be interpreted as an intentional wink." In contrast, the other boys' movements are

performing two types of acts: first, an intentional bodily movement (to contract one's right eyelids); and, second, a communicative action (to send a signal by means of a wink).

A thick description of the *winker's act* of contracting his eyelids would have to be sensitive to the variety of aspects that confer to the wink the status of communicative action. As noted by both Ryle and Geertz, at least five aspects could be described by a thick description. First, the boy's production of the signal, the wink, is deliberate. Second, it is directed at a unique receiving target, an accomplice. Third, the signal carries a message that can be interpreted by the accomplice. Fourth, the signal is interpretable by the receiver by virtue of receiver's knowledge of a socially established convention. Five, the communicative action occurs covertly, without cognisance of the other witnesses of the observable and public features of the wink.

By the same requirement of tracking distinctness in significance, a thick description of the *parodist's act* might have to be sensitive to the fact that it is a caricature of the winker's style in winking, which might operate by mimicking the parodist's wink with some subtle clumsiness or awkwardness. Thus, to track the distinctive significance of the parodist's wink in contrast to the winker's act, a thick description of the parodist's wink need to capture that it is neither conspiratorial nor deceptive – it is satirical. Consequently, the description would have to be sensitive to the fact that it is part of the success conditions of the parodist's satire that he be able to communicate to his audience that his act of contracting his eyelids is nothing but a deliberate forgery of the winker's wink.

The "contextualised description ☐ singular understanding" meta-heuristic

On the basis of a number of realistic ethnographical examples, Geertz (1973) argues that the aim of a cultural anthropologist is to provide thick descriptions of "the object of ethnography," which he defines as

> a stratified hierarchy of meaningful structures in terms of which twitches, winks, fake-winks, parodies, rehearsals of parodies are produced, perceived, and interpreted. (Geertz, 1973: p. 7)

According to Geertz, the subtle practices and concepts that compose the fabric of human cultural life are emergent on such a "stratified hierarchy of meaningful structures." Ethnographic descriptions are so "extraordinarily thick," Geertz argues,

> because most of what we need to comprehend a particular event, ritual, custom, idea, or whatever is insinuated as background information before the thing itself is directly examined. (Geertz, 1973: p. 9).

Ethnographical or sociological contextualised observations, or thick descriptions, may present themselves as "mere descriptions." However, to Geertz, they are better characterised as *meaning reconstructions*. When social scientists offer thick descriptions, they are presenting interpretative (i.e., hermeneutical) reconstructions built up from the apparently circular interactions between the phenomenon under study (the part of a cultural context) and the meaningful structures that compose the background of that phenomenon (the background structures of a cultural context). Thus, the aim is to discover not only agents' expressed intentions, but also the cultural structures upon which they depend.

From these statements, it follows that one can characterises Geertz's research strategy as one that is derived from a *contextualistic meta-heuristic*, which interprets thick descriptions as indicators of a learner's capability for contextualised cultural proficiency and social understanding. Using the conceptual framework I propose in the present work, a possible formulation for this meta-heuristic is thus:

> "Contextualised (thick) description ⮕ singular understanding" meta-heuristic: If a learner possesses the capability to produce contextualised or "thick" descriptions of a cultural phenomenon P (i.e., a contextualised reconstruction of the cultural significance an action, behaviour pattern, or institution), then that learner is in command of an ability to understand P and assess the relevance and virtues of first-order heuristics for studying and explaining P.

If a researcher takes this meta-heuristic as guide, it becomes feasible to devise a variety of first-order heuristics that the researcher could routinely use in his interpretative practice. For example, the meta-heuristic may imply that, if a learner has difficulties in explaining a

phenomenon that appear incomprehensible under some thin description, then the learner needs to translate such thin description into a thick description; that is:

"Contextualised description □ diminished confusion" heuristic: If I transform that thin description into a thick description of that phenomenon *P*, then I will be able to comprehend *P* that would otherwise appear incomprehensible.

This meta-heuristic captures a core aspect of Geertz's ambitious research programme, which has a considerable influence on the methodologies adopted in social sciences, in fields such as cultural anthropology (e.g., Hinton, 2004), sociology (e.g., Alexander, 2008), and political history (e.g., Goldhagen, 1996).

The "thick description → mindreading comprehension" meta-heuristic

Neither Ryle nor Geertz develop an analysis of the connections between "thick" descriptions and theories of the understanding of mental states and mindreading abilities (e.g., Bloom, 2004; Wellman, 1990; Wimmer & Perner, 1983). However, their accounts suggest that a thick description of social action requires that the describer accounts for the way agents in the described situation mutually understand their complex mental states, meta-representations, and attitudes.

The fundamental role of mindreading abilities in constructing thick descriptions can be illustrated with Ryle and Geertz's example of the three boys who perform eye movements that are look-alikes but differ in social significance. Recall the significance of their acts: the twitcher merely twitches, the winker communicates by means of a wink, and the parodist rehearses and performs a satirical wink. Geertz envisages scenarios in which the complexity of a social situation is increased by recursion processes. Imagine, for example, that one discovers that the winker performed a *fake* conspiratorial-wink to deceive his friend into imagining that a conspiracy was taking place, although none is actually taking place – one of Geertz's examples. In that scenario, the thick descriptions of what the parodist is parodying and what the rehearser rehearsing have to be revised accordingly. That revision also raises the question of whether or not the rehearser believes that the winker's signal is a forgery, and whether or not he is rehearsing the parody of a forgery. For example, if the rehearser is aware

of winker's deception, a thick description of the rehearser's action might highlight that he is practicing a mockery of a friend faking a wink to deceive an innocent into thinking that a conspiracy is taking place.

To understand the revised scenario by means of a thick description, an enquirer needs mindreading abilities that can represent the rehearser's thoughts, which may include recursive levels of meta-representations (e.g., O'Grady, Kliesch, Smith, & Scott-Phillips, in press). In the rehearser's example, an enquirer may need the ability to think three recursive levels of meta-representation, as in this statement:

> To assemble a thick description of the rehearser's behaviour, an enquirer needs to $believe_0$ that $[_1$ the rehearser $believes_1$ that $[_2$ the winker $believes_2$ that $[_3$ the innocent mistakenly $believes_3$ that a conspiracy is taking place.$]_3$ $]_2$ $]_1$

Thus, the example illustrates that a learner needs to understand multiple levels of meta-representations to produce contextualised "thick" descriptions of many complex social behaviours. If this idea is justified, then it can be basis for a contextualistic meta-heuristics that focuses on singular understanding derived from mindreading abilities, as follows:

> The "thick description ⊃ singular mindreading" meta-heuristic: If a learner possesses the capability to produce contextualised ("thick") descriptions of a set of social relations R, then that learner is in command of (i) an ability to understand the singular social significance of the social relations associated with R and (ii) an ability to assess the relevance and virtues of first-order heuristics for studying and explaining R.

Geertz would not have used these terms. However, his analysis of thick descriptions clearly indicates that, on his account, mindreading abilities are critical to the ability to assemble thick descriptions.

5.3   Polemical and scientific ambitions of contextualism

At first glance, contextualistic strategies, such as Geertz's strategy for ethnographical research, may look like a purely descriptive and qualitative form of knowledge. However,

many contextualistic strategies such as Geertz's programme aim beyond the mere production of descriptive accounts: they aim to be explanatory in their own contextualistic ways.

In Geertz's science of interpretative explanation

The ambitions of contextualistic strategies can be illustrated by Geertz's work. "Interpretive explanation," Geertz argues, is "a form of explanation, not just exalted glossography" (Geertz, 1983: p. 22). Geertz's programme aims to provide the foundation for a cultural science of human agents' interpretations and the cultural structures upon which such interpretations occur. Such a cultural science focuses on meaning structures, not the search for mechanisms and causes.

One source of evidence of the ambition of Geertz's account lies in his claims that such an interpretative science is capable of evaluating the relevance and virtues of particular research practices – thus, in my terms, of reductionistic heuristics. Specifically, Geertz's cultural science is edified on a series of *contextualistic polemics and criticisms* directed against reductionistic and mechanistic explanatory strategies. Geertz repeatedly asserts that the latter are insufficient to explain human practices. For example, in a number of places, Geertz argues that his interpretative research strategy is fundamentally distinct from the mechanistic strategies deployed by reductionistic sciences. Interpretive explanation, he contends,

> issues not in laws like Boyle's, or even forces like Volta's, or mechanisms like Darwin's, but in constructions like Burckhardt's, Weber's, or Freud's. (Geertz, 1983: p. 22)

Regarding causal analysis, Geertz asserts that social events

> do have causes and social institutions effects; but it just may be that the road to discovering what we assert in asserting this lies less through postulating forces and measuring them than through noting expressions and inspecting them. (Geertz, 1983: p. 34)

Geertz calls for a "refiguration" of social theory," which he describes as "a sea change in our notion not so much of what knowledge is but of what it is we want to know" (1983: p. 34). This is an appeal for transforming the relation between social sciences and the humanities. If, as he argues, conventions, feelings, ethics, dramas, and contextualised texts and structures of meaning give significance to human society, then the mechanistic strategies

of reductionistic science might not be better equipped than the humanities to explain human practices.

In cross-cultural empirical research

Although the strategy of thick descriptions is a pervasive sort of contextualism, there exist other scientifically ambitious forms of contextualistic heuristics.[51] For example, investigators from traditions associated with cultural psychology have defended cross-cultural experimental methods for social sciences that include contextualistic heuristics at their core (M. Cole, 1988, 1996/1998; Henrich et al., 2010). A number of such contextualistic accounts have argued that some of the universalistic assumptions that guide reductionistic models are biased because these models underestimate or misrepresent the variability of sociocultural phenomena (Ceci, Kahan, & Braman, 2010; Henrich et al., 2010; Smith, 2007).

In this tradition, Henrich and colleagues (2010) have challenged the experimental methodology of many universalistic accounts and defended the use of contextualistic heuristics derived from cross-cultural research. Their challenge is based on the claim that universalistic generalisations in the psychological and cognitive sciences are too often derived from narrow samples of human populations (Western, Educated, Industrialised, Rich, and Democratic – or "WEIRD" – populations). The focus of universalistic accounts on such narrow samples, they argue, lead researchers to miss important patterns of variation that can falsify universalistic assumptions. Henrich and colleagues conclude that more empirical enquiries that take into account differences across cultural and historical contexts are needed to rigorously test the universalistic hypotheses of existing ahistorical theories.

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[51] In addition to the example of cross-cultural empirical enquiries, universalistic assumptions have also been challenged by researcher arguing that the hegemony of statistical analysis in psychology comes at the expense of insights that can be derived from idiographic methods (Barlow & Nock, 2009; Mos, 1998; Thomae, 1999).

5.4 Contextualistic heuristics in research on person identification

If the analysis developed in the preceding sections is correct, contextualistic heuristics are pervasive in philosophy, the social sciences, and the humanities. This proposition can be tested in respect to research on person identification. Have contextualistic heuristics been used in scholars' investigations of person identification? I argue that they have. Humanist scholars and social scientists have deployed several types of contextualistic heuristics to investigate person identification. In what follows, I consider some of such contextualistic heuristics and strategies.

Developing learners' singular understanding of contingent and unique causal histories in cases of (mis-)identification

Research works that produce thorough enquiries into *individual cases* of person identification and misidentification, such as biographies and judicial enquiries into misidentifications, are, I contend, typically guided by contextualistic heuristics. A rationale that supports this claim is related to the contingent and unique character of the factors that need explaining in case studies. As I argue throughout these pages, contextualised descriptions of the *contingencies* of a case are needed for both explanations and normative assessments of that case understood as a particular, contingent, and unique case – that is, as a product of networks of singular causation, and thus singular causal histories.

In chapter 2 (see also the next chapters), I have introduced historiographical studies that have investigated the discovery that Martin Guerre was impersonated by Arnaud du Tilh for several months (Davis, 1983). Clearly, it is not possible to understand the singular social significance of Arnaud du Tilh's imposture without having a background understanding of a number of contextualised descriptions of the behaviours of, and causal and social relations between du Tilh, Guerre, and Guerre's relatives. That point could be made with any other judicial cases of person identification or misidentification.[52] If we formulate the point in the

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[52] Consider the more recent case of Timothy Brian Cole (1960-1999), an African-American military veteran and a Texas Tech University student wrongfully convicted of raping a fellow student in 1985 (McKinley, 2010). Cole died after serving 14 years in prison, but was

terms of the heuristic-based framework, then it suggests that learners' enquiries into particular cases of identification and misidentification are guided by contextualistic heuristics such as this meta-heuristic:

> "Contextualised (thick, idiographic) description ⟶ singular understanding of person (mis)identification" meta-heuristic: If a learner – e.g., a forensic researcher, a biographer – possesses the capability to produce contextualised descriptions (e.g., thick, idiographic descriptions) of an individual case of person (mis)identification *M*, then that learner is in command of an ability to track, identify, and understand *M* (i.e., singular understanding).

In addition to the general argument that I just presented, it is possible to pursue more specific lines of argument based on a consideration of forensic practices and legal institutions – see, below, my analysis of the contextualistic assessment of models of misidentification (Twining, 1983/2006).

In cultural and technical understanding of person identification

In addition to the field of case studies, the use of contextualised descriptions is prominent in enquiries of person-identification phenomena that are specific to particular cultural and historical contexts, which also require singular understanding. A first example in this category, which has been discussed in chapters 2 and 4, is the cultural and political history or sociology of the social mechanisms that human societies have developed to scaffold the identification of individuals. These techniques include means of identification such as passports, latent fingerprint analysis, and DNA analysis. Much research on the history of such techniques has embraced contextualistic methods of analysis based on contextualised

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posthumously pardoned. On February 6, 2009, a Texas district court judge announced that it was established that Timothy Cole did not commit the rape. The judge, Charlie Baird, reversed the conviction and requested the removal of Cole's record. It was the first posthumous DNA exoneration in the history of the state of Texas. As in the case of the impersonation of Martin Guerre, it is not possible to understand the complex significance of Cole's case without understanding contextualised descriptions of the different agents who have played a role in the development of that case.

description of the invention and use of these identification methods. Thus, that research needs to be guided by a contextualistic strategy, which may be outlined thus:

> *"Contextualised description ⬜ singular understanding of identification techniques"*
> *meta-heuristic*: If a researcher produces a contextualised (thick) descriptions of the
> invention and social uses of techniques *T* that enable or scaffold some person-
> identification practice, then that learner is in command of an ability to understand the
> role and social significance of *T* in such person-identification practice.

For example, when discussing the social mechanisms involved in the forensic identification of recidivist criminals, social scientists typically appeal to the sociocultural variability in methods for the forensic identification of persons in order to account for different patterns of identification behaviours (S. A. Cole, 2001; Torpey, 2000; Wilder & Wentworth, 1918).

In historicised account of the self and other person-related concepts

In another tradition of contextualistic enquiries on person identification, scholars have argued that a learner's acquisition of concepts associated with person-identification phenomena (e.g., the concepts of *self* and *social identity*) vary as a function of historical and cultural contexts. For example, historical and cultural changes in conceptions of the human *self* have been discussed in a number of fields, including philosophy (Taylor, 1989), anthropology (Carrithers, Collins, & Lukes, 1985; Mauss, 1938/1985; Shweder, 1991), and cultural neuroscience (Kitayama & Park, 2010; Markus & Kitayama, 1991).

There are other research fields in which contextualistic heuristic are essential. However, before presenting my arguments to demonstrate the necessity and productivity of contextualistic heuristics, I need to present the objections that have been raised to the research strategies and heuristics of contextualism.

5.5   Reductionistic and epistemological objections to contextualistic heuristics

Reductionistic and contextualistic strategies of enquiry into human behaviour in general, or person identification in particular have been affected by lasting theoretical antagonisms. It is

likely that this state of affair derives from a pervasive methodological challenge: the difficulty in finding a common conceptual and methodological foundation for the reductionistic theories of human behaviour and contextualistic and non-reductionistic theorising in the humanities and social sciences. These antagonisms are sometimes addressed in the context of debates on the "two cultures" phenomenon (Snow, 1959). That debate addresses the problems raised by the opposition between the culture of researchers working in the natural sciences and the culture defended by scholars from humanistic disciplines (e.g., history, philosophy, and literary studies). The intensity of this debate evidenced by both vigorous academic debates (Bullot & Reber, 2013b; Pinker, 2002; Slingerland & Collard, 2011) and numerous controversies in broad audience publications and news outlets (e.g., Hughes, 2012; Kitcher, 2012; Pinker, 2013; Pinker & Wieseltier, 2013; Wieseltier, 2013). Here, I review some of the major objections that have been raised against contextualistic strategies.

The arguments from scientific and causal integration

One of the core arguments in the reductionistic critique of contextualistic and historical research strategies is an argument from the unity of science. Its logic is reminiscent of some models of inter-theoretic reduction – see chapter 3. The argument relies on a reductionistic requisite (or desideratum) for the unity of science, which assumes the explanatory value and feasibility of an ambitiously integrative form of reductionism. The argument can be sketched thus:

> *1. Reductionistic or methodological requisite*. A heuristic strategy in the social sciences or the humanities can produce robust empirical knowledge and explanations only if the causal hypotheses and methods it advances are constrained by the causal hypotheses and methods of natural sciences.

> *2. Failed integration with scientific methods*. Contextualistic heuristic or strategy *S* is not constrained by the causal hypotheses and methods of natural sciences.

> *3. Falsification of a contextualistic strategy*. From 1 and 2, it follows that contextualistic or heuristic strategy *S* cannot produce robust empirical knowledge and explanations.

Different versions of the argument have been used in debates about the foundations of the social sciences (Tooby & Cosmides, 1992; Wimsatt, 2014) and the foundation of historical knowledge (Danto, 1956, 1985/2007; Fischer, 1971; McCullagh, 1984). The characteristics of each version vary as a function of the conception one adopts of the first premise, the reductionistic requisite (or methodological *desideratum*).

John Tooby and Leda Cosmides (1992) have defended a version of this argument from the unity of science in their critique of the "standard social science model (SSSM)" (Tooby & Cosmides, 1992), the conceptual framework that – on their view – guided the development of the social sciences during the twentieth century. In their analysis, Tooby and Cosmides (1992) adopt a reductionistic requisite (premise 1), which they term the "causal integrated model." The causal integrate model is offered as an alternative to the standard social science model. The other components of Tooby and Cosmides' argument aim to establish a point that corresponds to premise 2, which is that much contextualist research in the social sciences – for example, Geertz's (1973) conception of "thick descriptions" and local knowledge, or the study of cross-cultural variations over historical time – do not satisfy the reductionistic requisite, and thus fail to produce rigorous robust empirical knowledge and explanations.

Tooby and Cosmides discuss several types of evidence or argument that, on their view, demonstrate the incompatibility of the social science model – and thus the contextualistic research and heuristics used by that model – with scientific and reductionistic methods. One of their most important criticisms is the claim that typical scholars from the social sciences erroneously postulate the *ontic autonomy* of cultural phenomena with regard to the ontic and causal realms described by physics and biology. According to Tooby and Cosmides' analysis, this ontological postulation would lead many social science and humanistic scholars to underestimate the roles of physical and biological mechanisms in their explanation of sociocultural phenomena.

This aspect of Tooby and Cosmides' critique is justified in a number of cases, and the gist of the criticism has been echoed by similar concerns about "thick description" approaches in philosophy of science (Wimsatt, 2014). This is because, in the framework linked with anti-

reductionistic advocacy for thick descriptions and other hermeneutic practices, several philosophers (Margolis, 1995, 2000) and social scientists like Geertz and his followers have built their research on the idea that the study of cultural phenomena must rely on the interpretation of "cultural meanings." In a number of cases, such cultural and symbolic meanings are considered as causally independent from physical and biological mechanisms (Margolis, 1995, 2000). In other cases, anti-reductionists assert that cultural and symbolic meanings are at least not amenable to mechanistic explanation – see, above, Geertz's argument from the thinness of mechanistic explanation. The emphasis on the "interpretative" study of autonomous can lead anti-reductionists to make strong, controversial ontological claims on the ontic autonomy of sociocultural phenomena from physical, biological, and mental mechanisms. This kind of ontological commitment can have significant methodological implications, the most notable being the dismissal of mechanistic and biological explanations by some anti-reductionists from the social sciences and the humanities.

Epistemological objections from contextualistic biases and logical fallacies

The critique of contextualist ontologies derived from the argument from the unity of science can lead to a variety of more specific criticisms. For example, Tooby and Cosmides (1992) argue that social science scholars typically do not attempt to *corroborate* or *falsify* mechanistic hypotheses and models by means of standard scientific methodologies such as experimental methods. Thus, in Tooby and Cosmides' view, many claims made by contextualists are not empirically supported. That criticism, from methods of empirical falsification, is but one example of a broad set of methodological criticisms highlighting that some contextualistic strategies lead to methodological biases and fallacies. There are a plethora of arguments from contextualistic biases and fallacies; and I will have to limit my discussion to the examination of a few representative examples.

Arguments from contextualistic biases and fallacies can be found in debates on the justification of descriptions of past events and causal explanation in historical scholarship, philosophy of history, and related fields. Some of the philosophers who analysed reasoning

and decision-making in historical scholarship (Dray, 1966; Fischer, 1971; McCullagh, 1984; Popper, 1962; M. White, 1965) have argued that historians' descriptions of past events and historians' causal explanations typically face a broad range of epistemological problems, methodological challenges, and logical biases.

David Hackett Fischer, an historian interested in the logic of historical enquiry, has assembled an extensive catalogue of logical fallacies and mistakes commonly made by historians (Fischer, 1971). Although his account has not directly benefited from the sciences of heuristics and biases, his approach is very much in the spirit of the theory of heuristics and biases. For example, in respect to learners and historians' causal reasoning about past events, Fischer (1971) has outlined a typology of different types of biases and errors causal reasoning that have affected the description and explanation of past events and causal connections by professional historians. Among the dozens of other types of fallacies that he has carefully discovered and recorded, Fisher describes occurrences of the *post hoc* fallacy (i.e., erroneously inferring that *B* was caused by *A* because *B* occurred after *A*; p. 172-175), the fallacy of confusing statistical correlation with causal relation (p. 167-168), the fallacy of reducing complexity to simplicity in causal analysis (p. 172-175), and the fallacy derived from an indistinct specification of the components of a causal explanation (or fallacy of indiscriminate pluralism, p. 175-177).

From the point of view of logic and methodology, if one carefully analyses Geerz's interpretative strategy (e.g., the "contextualised description ⬜ singular understanding" meta-heuristic), it is clear that Geertz's method of contextualised descriptions can cause biases such as Fischer's fallacy of indiscriminate pluralism. Because Geertz defends a strong form of semantic holism and anti-reductionism, Geertz refrains from using reductionistic heuristics for analysing causal systems, such as the decomposition-and-localisation meta-heuristic. Thus, it is possible that some followers of Geertz's distinct strategy fail to provide clear and distinct causal analyses, committing what Fischer's fallacy of indiscriminate pluralism – see also Wimsatt (2014). For example, an interpretation of Geertz's method that can be, I think, biased and conducive to fallacies is this rule:

"Thicker description ⇒ augmented comprehension" heuristic: If I am unable to explain what caused phenomenon *P* in context *C* with my model *m*, then I need to enrich model *m* with additional information and descriptions of *C*.

It might seem intuitive that learning more about a phenomenon's context is beneficial to explaining that phenomenon. However, this is much too simplistic a model of comprehension or explanation. The heuristic implies that if I do not understand that phenomenon, then I should seek more information or data about the context in which that phenomenon occurs. For example, if I cannot explain why an artefact is dysfunctional, the heuristic recommends that I should seek and accumulate more data or information about the context of that artefact. However, that heuristic is unhelpful in that it does not provide criteria for selecting in the context and system under consideration what could be relevant for explaining the phenomenon. It fails to indicate routes for tracking causes (Cartwright, 2007).

5.6   The indispensability and productivity of contextualistic heuristics

It would foolish to conclude from the reductionistic and epistemological objections I just presented that contextualistic heuristics are generally useless in general, or useless in the research on person identification. Advocates of a *critical contextualism* can appeal to powerful arguments to justify contextualistic heuristics and rebut reductionistic objections (some of which are outlined in chapter 4).

A rebuttal from the compatibility of mechanistic and contextualistic heuristics

Consider first the argument from scientific and causal integration. I think that we should concede that it is a powerful argument that undermines the naïve ontologies defended by a number of contextualists. However, the argument does not come without problems and limitations of its own. First, in Tooby and Cosmides' version of the argument, the argument assumes a strong reductionistic conception of the unity of science that is dismissed by most contemporary philosophers of science, as we saw in chapter 3. Second, the polemic that motivates the argument sometimes assumes a false dichotomy between reductionistic (or mechanistic) methods and contextualistic strategies of enquiry. That dichotomy is depicted

under numerous guises in the debate about the "two cultures" and the need for "consilience". However, reductionistic and contextualistic heuristics can be understood, and are – I contend in these pages – better understood as complementary resources of enquiry. This is a point that I have defended earlier (Bullot, 2009a, 2014a, 2015; Bullot & Reber, 2013a, 2013b), and the next chapters are an attempt to provide a detailed defence of this position.

A rebuttal from the pervasiveness of heuristic bias

Consider now the argument from biases and logical fallacies. As I argued in chapters 3 and 4, the risk of biases and fallacies comes with the use of any heuristics. Thus, the risk is inherent to the use of heuristics; it is not specific to contextualistic heuristics. Both reductionistic and mechanistic heuristics can be biased and conducive to fallacies. Thus, the discovery that the reasoning of users of contextualistic heuristics is sometimes biased and conducive to fallacies is not a reason for undermining the use of contextualistic heuristics. It is a reason for seeking the improvement of defective contextualistic heuristics. In sum, the argument from the biases and fallacies of contextualistic heuristics does not undermine the use of such heuristics, it is an appeal for their critical examination.

The rebuttal from singular understanding

A more general yet still robust line of defence for contextualistic heuristics is associated with the argument from singular understanding. Contextualistic heuristics are, I contend, necessary to develop the explanation of phenomena that are unique, such as macro-events in human history (e.g., the Industrial Revolution, the Holocaust) and micro-events and phenomena (e.g., the production of unique exemplars of a type of technical artefact during the Industrial Revolution).

That defence of contextualistic heuristics derives from two core hypotheses, which I endeavour to defend to defend in these pages. First, the contextualised descriptions – or "thick", "idiographic", or "particularistic" descriptions – of contextualistic heuristics are a necessary condition for singular understanding (the comprehension and explanation of contingent singular histories).

Second, a learner's command of singular understanding is a necessary condition for the success in the learner's ability to explain a wide range of human behaviours, including context-specific practices of person identification.

From these two premises, one may conclude that contextualistic heuristics are necessary conditions of a wide range of explanation of context-specific, unique, and contingent phenomena in the domain of person identification and other domains. Debates on the role of idiographic descriptions in psychology are reminiscent of this argument (Barlow & Nock, 2009; Lamiell, 1998; Pelham & Pelham, 1993; Windelband, 1894/1998).

The rebuttal from singular understanding in epistemological (normative) evaluation

Another way to highlight the fact that it would be misleading to eliminate contextualistic heuristics is to emphasise the role of contextualistic heuristics to rectify reductionistic heuristics in Wimsatt's sense (chapter 3). Instead of conceiving reductionistic heuristics and contextualistic heuristics as two exclusive modes of thinking and reasoning, I am arguing in these pages that they are better understood as complementary strategies. Good critical thinking and scientific reasoning operate by using both types of heuristics.

The hypothesis that scholars appeal to contextualistic heuristics for detecting biases in reductionistic heuristics can be illustrated by an example from the literature on the social consequences of the misidentification of persons. William Twining (1983/2006), an expert in the theory of legal evidence, has proposed an analysis of misidentification that deploys a careful contextualistic critique of a traditional and legally reductionistic approach to the judicial problem of misidentification.

According to Twining's (1983/2006) account, the orthodox statement of the problem of judicial misidentification is thus: on occasion, an innocent person is convicted by a jury of a crime he did not commit, and such wrongful conviction is the direct outcome of mistaken eyewitness testimony relating to identification. Often, Twining (1983/2006) argues, the orthodox description is coupled with an expository approach to law, a form of legal formalism and reductionism. In the expository view, the study of law consists predominantly of the exposition and analysis of the rules of positive law in force in a given jurisdiction. Advocates

of the expository view consider that history, philosophy, and the social sciences of law are not really part of the specialized study of law. In contrast, Twining argues that the orthodox and expository views of judicial misidentification present an artificially narrow definition of the problem of misidentification, and that such a biased approach is sometimes reflected in the psychological literature on eyewitness misidentification. One of the biases that Twining criticises is the tendency of legal scholars from the expository tradition to view information about a person's identity primarily in terms of admissible evidence presented to a jury.

In contrast to views affected by reductionistic biases, Twining's contextualistic approach draws from the idea that information about the identity of a person or persons involved in some judicial event has a bearing, not solely on adjudication of guilt or innocence, but on a wider variety of decisions that can have potentially harmful or disturbing consequences for persons who are targets of identification. Twining describes the biases of an idealised model of a standard case of the problem of misidentification that reflects some of the biases in the expository literature and orthodox specification of the problem of misidentification. On that basis, he argues that a contextualistic and information-theoretical model of misidentification could provide the basis for a systematic and more realistic approach to misidentification that can rectify the biases of the orthodox and expository views.

The argument from moral and political normative evaluations

The previous examples were chosen from descriptive and explanatory accounts. The final argument I wish to present as a defence of contextualistic heuristics is associated with the justification of normative and evaluative appraisals of a variety of socio-cultural phenomena (Alexander, 2008; Fischer, 1971: p. 316-318; Geertz, 1973). Contextualistic heuristics are, I contend, essential to normative evaluations that occur in moral and political debates.

It is important to realise that the appeal to contextualistic heuristics is also pervasive in theories of *normative* and *evaluative* behaviours, which either aim at explaining normative practices or aim at formulating norms for the regulation of specific practices. For example, many accounts of aesthetic and artistic norms are guided by contextualistic heuristics (see below). In contrast, mechanistic accounts of aesthetics and artistic behaviours in

psychological and cognitive sciences have proved reluctant to investigate normative judgment and normativity in artistic practices (Gilmore, 2013; Juslin, 2013; Reber & Bullot, 2013). Likewise, a number of contextualistic theories of person identification address the topics of social normativity that have not been addressed in the framework of reductionistic accounts. For example, contextualistic strategies and heuristics are pervasive in normative enquiries that address moral, legal, and political problems regarding how individual or collective agents ought to use and limit the practices of tracking and identifying human persons (Chesterman, 2011; Nissenbaum, 2010). In such normative enquiries, the decision-making processes that need to be carried out to address (ostensibly intractable) moral, legal, and political problems are facilitated by the contextualisation of the normative problems.

A telling example is the normative debate on privacy and public surveillance (Lyon, 2007; Nissenbaum, 2004; Sorell & Draper, 2012). The practices of social surveillance in an era of information technologies include the identification and monitoring of human persons by means of a variety of media, including consumer profiling, video recording, data mining, tracking of Internet users' online behaviour. Such surveillance practices have challenged traditional privacy norms. For example, some normative debates about the governmental regulation of social surveillance and privacy encounter the challenge of adjudicating between the need of governmental surveillance for ensuring security and the need of limiting governmental surveillance to guarantee citizens' right to privacy. A normative puzzle arises from the tension between two types of cases. On the one hand, there exist clear cases of new information devices and surveillance systems that serve societal as well as context-based values, ends, and purposes better than those we already have in place (e.g., promoting intellectual development, health and well-being, and participative democracy). On the other hand, there exist cases in which identification technologies diminish control over information about ourselves and others, and raise the threat of a variety of abuses and political challenges.

Nissenbaum (2004) has argued that we need to develop a contextualistic approach to find ways to resolve this normative problem. Nissenbaum (2004) proposes an analysis of "contextual integrity" as an alternative to traditional conceptions of privacy, which aims to capture the nature of challenges posed by information technologies. Contextual integrity ties

adequate protection for privacy to norms of specific social contexts, demanding that information gathering and dissemination be appropriate to that context and obey the governing norms of distribution within it. Building on the idea of "spheres of justice," developed by Michael Walzer (1983), Nissenbaum (2004) argues that public surveillance often violates a right to privacy because it violates contextual integrity; as such, it constitutes a form of injustice. According to Nissenbaum's framework of contextual integrity, finely calibrated systems of social norms, or rules, govern the flow of personal information in distinct social contexts (e.g., education, health care, immigration, and politics). These norms, which Nissenbaum calls *context-relative informational norms*, define and sustain essential activities and key relationships and interests, protect people and groups against harm, and balance the distribution of power. Responsive to historical, cultural, and even geographic contingencies, informational norms evolve over time in distinct patterns from society to society. Information technologies alarm us when they flout these informational norms –when, in the words of the framework, they violate contextual integrity.

5.7   Recapitulation, defending challenged contextualism

To reiterate the analysis proposed in this chapter, one of the conclusions that I have justified is that a wide range of enquiries into human behaviour and person identification (in both the humanities and the social sciences) have been guided by contextualistic heuristics. For example, contextualistic methods are central to studies investigating particular cases of person identification and misidentification, techniques that scaffold identification practices, and cultural variations in the conceptions of selves and personal persistence. Advocates of logical, mechanistic, and reductionistic research strategies have offered commanding criticisms of biases and fallacies that occur in contextualistic strategies of research. A first objection to contextualism is the argument from integrative science and causal models. A second objection is the argument from contextualistic biases and fallacies, which derives from the discovery that many contextualistic methods and heuristics are conducive to biases and fallacies. These objections are illustrative of the antagonisms between mechanistic and contextualistic traditions. It is undeniable that a gap exists between the majority of mechanistic accounts of

person identification, which are typically guided by mechanistic heuristics, and contextualistic accounts of person identification practices (either normative or non-normative). Because there is much to be regretted in that state of affairs, I have presented several arguments in defence of the critical use of contextualistic heuristics. In particular, I have argued that mechanistic and contextualistic heuristics can be viewed as complementary resources for developing critical enquiries. To continue this line of reasoning, I devote the next chapters to the defence of a psychohistorical theory of person identification that attempts to overcome some of the antagonisms between reductionistic and contextualistic theories.

6   A Psychohistorical Theory of Person Identification and Control

The previous chapters provided an opportunity to reflect on factors contributing to disunity in the sciences of person identification and control. These factors include the complexity of person identification, the lack of shared standards for understanding core vocabularies (e.g., the terminologies of *identification* and *personal identity*), and methodological idiosyncrasies descended from the history of each discipline. Further, as I noted in chapters 4 and 5, one of the central factors generating methodological disunity is the difficulty in conciliating mechanistic and contextualistic heuristics.

In the biological and cognitive sciences of person identification, researchers have tended to adopt reductionistic programmes. Such programmes are guided by mechanistic heuristics that rely on ahistorical[53] and universalistic assumptions. They typically aim to explain identification behaviours and skills using law-like generalisations and the decomposition of mental mechanisms presumed to be cognitive universals.

In chapter 4, I considered examples illustrating how mechanistic and universalistic heuristics have been used in the cognitive sciences of face recognition and person perception (e.g., Bruce & Young, 1986; Gobbini & Haxby, 2007). Similar reductionistic strategies are found in other research programmes, including enquiries into the perception of agency (Heider, 1958)[54] and the understanding of other minds.[55] In opposition to contextualistic

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[53] I use the qualifier *ahistorical* to indicate that a theory does not include historical factors among its core explanatory constructs (see, e.g., Bullot, 2015; Bullot & Reber, 2013b). By *historical factors*, I mean variables and causal relations that are distinctive of a particular evolutionary and human history, or a particular cultural context.

[54] Fritz Heider's (1958) social psychology is an illustrative example of a research programme that combines ahistorical reductionistic strategies with universalistic heuristics (see Bullot, 2015: p. 360-361). Heider's ahistorical *attribution theory* argues that the core concepts of

accounts, many mechanistic models consider cultural variations and historical contingencies in person-identification practices as negligible.

In contrast to these mechanistic programmes, *contextualistic* strategies and heuristics dominate research on person identification conducted in multiple fields of the humanities and social sciences. Contextualistic accounts of social identification include methodologies and heuristics associated with contextualised (or "thick") descriptions of social practices of identification and control (e.g., Geertz, 1973; Goldhagen, 1996; Hinton, 2004), the analysis of context-specific techniques for identifying individuals (e.g., Caplan & Torpey, 2001; S. A. Cole, 2001; Groebner, 2001; Lyon, 2009), and a variety of contextualistic approaches to the normative evaluation of the practices of person tracking and social control (e.g., Foucault, 1975/1977; Logan, 2012; Nissenbaum, 2010; Solove, 2009).

Recently, I proposed a conceptual framework that uses both contextualistic and mechanistic heuristics to study person and agent identification (Bullot, 2014a, 2015). I refer to this framework as the *psychohistorical theory of person identification*. This theory aims to overcome some of the antagonisms that have divided the biological and social sciences of person identification. To develop this account, I introduce in this chapter a much more comprehensive version of this framework and apply this new account to the study of social control (chapters 7-9). My new theory expands the ontological and epistemological components of my previous proposals, and it derives novel heuristics and predictions from its core hypotheses.

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common-sense psychology derive from a universal conceptual system for interpreting behaviour and attributing causal dispositions to agents and objects (Heider, 1958: e.g., p. 14). Other statements of attribution theory can be found in Jones and colleagues (1971), Bem (1972), and Kelley (1973).

[55] The association of mechanistic and universalistic heuristics is found in theories positing that the social brain is a predictive mechanism that creates models generating systematic biases or illusions (see, e.g., Frith, 2007: p. 140) and in clinical works (see, for example, Castelli and colleagues (2000) and Horan et al. (2009)).

6.1   A psychohistorical strategy for the enquiry into person identification and control

What do I mean by asserting that my account of person identification is "psychohistorical"? As noted in chapter 1, we need to distinguish broad and narrow senses of "psychohistorical." First, on occasion, it is helpful to interpret the term *psychohistorical* in the context of a *broad* interpretation (section 1.4), which refers to research strategies and conceptual frameworks that integrate (i) the contextualistic heuristics and *historical* methods typically used in the social sciences humanities with (ii) the mechanistic heuristics and explanations typically used in the *psycho*logical and biological sciences. Second, one can also specify narrow interpretations of the term "psychohistorical" (section 1.4), which are used to refer to particular instances of theories or heuristics.

The account of person identification I propose is psychohistorical in the broad sense. This is because it examines person identification by means of a conceptual framework investigating the interactions between (i) the mechanisms that produce the persistence and causal *histories* of persons, which I will call "person-making" mechanisms (or "personal persistence" mechanisms, see section 6.2), and (ii) the mechanisms that enable the *tracking and identification* of such persons, which I will term "person-identification" mechanisms (section 6.3).

In the framework I propose, *person-making mechanisms* are ecological, biological, and social systems that cause the existence of persons and of their unique causal histories.[56] For example, the mechanisms of human sexual reproduction are person-making mechanisms because these mechanisms cause the production of persons understood as human organisms. If a learner acquires an understanding of how sexual mechanisms work, this understanding provides the learner with a resource to explain the production of persons *qua* organisms. In contrast, *person-identification mechanisms* are ecological, biological, and social systems that cause a learner's tracking and identification of the persistence and identities of persons.

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[56] In Bullot (2015), I used the expression *agency-making mechanism* whereas here I use *person-making mechanisms*. This is because my present focus is on the analysis of concepts of person kinds.

Lastly, *person-control mechanisms* are systems that enable the causal manipulation of persons, and therefore the causal manipulation of person-making mechanisms (see chapter 7).

Sketch of a psychohistorical theory of person identification

The structure of psychohistorical theory of person identification I propose is presented in Figure 6-1. This figure presents a schematic of the core relations of *person identification* posited by the theory; relations of *person control* are analysed in more detail in chapter 7. Several components of the diagram aim to illustrate hypotheses and arguments developed in different research fields.

The left-hand side of Figure 6-1 includes a component representing a *target person* embedded in an overarching system labelled *person-making mechanisms*. The latter denotes the persistence mechanisms that cause the existence, behaviours, and "identities" of that particular target person. Note that a core hypothesis of the theory is that there exist different kinds of persons, which are specified in section 6.2. To count as an instance of as person, the target of an act of person identification must belong to *at least* one person kind. However, a target may often belong to several person kinds concurrently. The relations between the components *target person*, *person-making mechanisms*, and other systems in the diagram denote ontic relations examined by ontological research on persons in the philosophy of biology, psychology, and the social sciences (see section 6.2).

The right-hand side of Figure 6-1 includes a component named *learner* embedded in an overarching system named *person-identification mechanisms*. The former is an abstract representation of a learning agent undertaking different sorts of acts related to person identification. The expression "person-identification mechanisms" refers to mental and social systems enabling practices and acts of person identification. The relations between the components *learner*, *person-identification mechanisms*, and other systems denote relations investigated by psychological and epistemological research on the mechanisms of person identification. I provide an analysis of these mechanisms in section 6.3.

Inspired by the mechanistic strategy, the graphic representation of *person-identification mechanisms* is a model guided by a decomposition-and-localisation heuristic (Bechtel &

Richardson, 1993/2010). This model decomposes the skills and behaviours of person identification into different clusters of *tracking subsystems*, which have different forms of *sensitivity* to target persons.[57] In comparison to mechanistic explanations guided by individualistic heuristics (chapter 4), however, I argue that identification systems are distributed and culturally scaffolded (see section 6.3 and chapters 7-9). Thus, my account of person-identification mechanisms is not individualistic.

The point of my critique of individualism is not to deny that some of the person-tracking mechanisms enabling person identification are embedded in the learner's brain and individual organism. The aim of my critique is to demonstrate that, as explained in chapter 4, some individualistic theories are incomplete because they screen out the fact that some person-tracking mechanisms work through interactions with supporting systems – or "scaffolds"[58] – in the learner's cultural and historical context. This core hypothesis is illustrated by the component *ecological, social, and institutional scaffolds*, located at the bottom the diagram. The sociological and cultural perspectives denoted by this component are discussed more directly in chapters 7 and 8.

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[57] Tracking and sensitivity systems are systems that develop the learner's ability to become sensitive to persons and their histories (Bullot, 2014a, 2015).

[58] My use of the metaphor of scaffolding refers to the tradition developed by Wood, Bruner, and Ross (1976), Wimsatt and colleagues (Caporael, Griesemer, & Wimsatt, 2014; Wimsatt, 2014; Wimsatt & Griesemer, 2007), Sutton (2010), and Sterelny (2010).
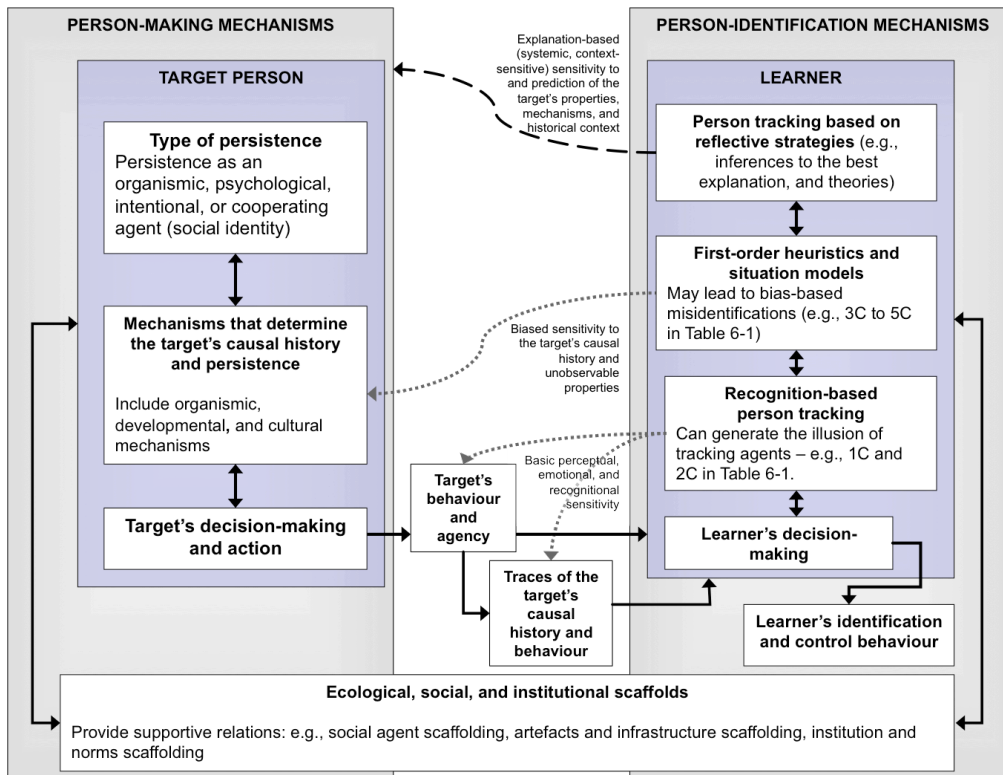
Figure 6-1 A psychohistorical theory of person identification.
Solid arrows refer to either causal-historical generation or feedback loops. Dashed arrows denote three different types of tracking (i.e., sensitivity) that enable three different types of person-identification processes. The typology of scaffolds (bottom) refers to Wimsatt (2014).

Integrating different fields of enquiry

The psychohistorical theory I outlined is an integrative framework for addressing both (i) ontological questions about persons and (ii) psychological, sociological, and epistemological questions about the mechanisms enabling person identification. For example, in respect to ontology, the framework addresses a basic question regarding the ontology of persons: what kind of things are the individuals tracked in person identification? Moreover, given the complexity of defining the ontic characteristics of a person, how can we do justice to the ontic complexity of persons and agents within a theory of person identification? In respect of psychology and sociology, what are the mental and social mechanisms that enable identification practices? In respect to epistemology, the theory can address questions about the robustness – or reliability – of identification practices. For example, how do human

learners differentiate the reliable identification of a person from erroneous and illusory cases of person identification?

Identification and tracking as sensitivity for control

The theory specifies the nature of a learner's sensitivity to a person by means of a set of core hypotheses. The first hypothesis defines identification as sensitivity (or tracking, as I take tracking and sensitivity to be closely related). A learner's act of *person identification* is *successful* if that learner is *sensitive to* – or track – objective properties of the mechanisms and processes that determine the target person's causal history and behaviour. In short, person identification occurs when a learner is sensitive to a person-making mechanism in some relevant way.

A learner can use different processes and methods to become sensitive to a target's behaviour and person-making mechanisms. These processes might be more or less intuitive, idiosyncratic, theoretical, and cooperative. Examples of this plurality (discussed in section 6.3), are represented in Figure 6-1 by different "sensitivity" arrows. The fundamental consequence of a learner's sensitivity to a target's person-making mechanism is that the learner can acquire an ability to manipulate or control aspects of the target's behaviour and mechanisms.

Theories of mechanistic explanation have demonstrated that a learner's understanding of a mechanism provides the learner with means to control the behaviour of that mechanism (Bechtel & Richardson, 1993/2010; Craver, 2007). The psychohistorical theory develops this analysis in the specific context of person identification. For example, biological and clinical knowledge of the organismic mechanisms controlling the development of persons *qua* human organisms provides guidance for controlling causally human organisms. I will illustrate this control in my discussion of medical interventions guided by biological and clinical knowledge (see chapter 7). Because there are profound, varied, and complex connections between person identification and both individual and social control, person identification should not be viewed as a purely intellectual act. Acts of person identification have fundamental implications for person control.

Another core hypothesis is a claim about errors in identification. A learner's act of person identification is *erroneous* if the learner is unable to become sensitive to – or fails to retain sensitivity to – the target's causal history and behaviour (and, therefore, aspects of the target's person-making mechanisms). Misidentifications derived from illusions and delusional misidentifications are erroneous in that sense. These failures can result in different types of identification errors, such as erroneous face recognition, interpersonal miscomprehensions, and erroneous explanations of behaviour. Failure to be sensitive to a person's mechanism results in decrease or loss of the learner's ability to control and manipulate the target.

In sum, on the one hand, the different types of a learner's sensitivity to a target (see the sensitivity arrows in Figure 6-1) correspond to different types of *person identification*. On the other hand, the different types of sensitivity failure that a learner encounters correspond to different types of *person misidentification*, or errors in person identification. As discussed in greater detail in chapters 7 and 8, sensitivity to specific person-making mechanisms provides the information and guidance necessary for controlling causally such mechanisms, resulting in major consequences for the target of identification and manipulation.

6.2   Kinds of persons and person-making mechanisms

To begin my exposition and defend these core hypotheses, I now turn to an analysis of person-making mechanisms, which are the mechanisms that cause the persistence over time of individual persons of different kinds.

Identities and the problem of personal persistence

A problem that engages ontological topics relevant to research on the persistence of persons is the *persistence question* (Olson, 2002/2010), also known as the *problem of personal identity* (Noonan, 1989/2003; Shoemaker, 1984; B. Williams, 1956-1957) and the *reidentification question* (Schechtman, 1996). This problem queries what makes a person at time t_0 the same person as a person at time t_{-1} and/or time t_{+1}.

The philosophical theories that address the persistence question have investigated a wide range of criteria for personal persistence, including causal contiguity (Nozick, 1981),

organismic continuity (Olson, 1997a), and psychological connectedness (Shoemaker, 1984). Two of the prominent ontological theories of personal persistence are the biological and psychological approaches.

The *biological approach* to personal persistence is guided by heuristics that aim to describe and explain *organismic continuity* in individuals of the species *Homo sapiens* (DeGrazia, 2005; Olson, 1997a, 1997b; J. Wilson, 1999; Wilson, 2005; Wilson & Barker, 2007/2013). Philosophical views that adopt the biological approach have been referred to as the *somatic approach* (Olson, 2002/2010), or *animalism* (Bajakian, 2011; Mackie, 1999). The *psychological approach*, in contrast, is guided by heuristics that attempt to describe and explain psychological or mental connectedness such as a continuity of memory states or continuity of conscious states (e.g., Parfit, 1984; Shoemaker, 1984; Unger, 1990).

To reductionists guided by universalistic heuristics in the research on person identification, the absence of an ontological consensus on the condition of personal persistence is a methodological intricacy to be screened out by approximations or omissions (as is the case in the individualistic theories examined in section 4.5). From the standpoint of a psychohistorical strategy, however, I am led to a different conclusion. Rather than qualifying this diversity as a methodological inconvenience to be silenced, the diversity in ontologies of personhood is predicted by the contextualistic strategy linked with the psychohistorical theory. If one considers the cultural diversity of social values (Elias, 1987/2010), "folk theories" (Atran & Medin, 2008; Mauss, 1938, 1938/1985), and scientific categorisations (Hacking, 1986/1992, 2002, 2007; Sugarman, 2009) that interact with learners' ontological beliefs about persons, then it should not come as a surprise that ontological conceptions of human persons are diverse, controversial, and context-specific. The challenge for the psychohistorical approach is to account for this diversity and integrate its analysis within a model of person identification.

Structure of a historical ontology of person kinds and person-making mechanisms

To address the challenge posed by the diversity of ontological accounts of persons, the strategy[59] I propose consists in classifying core causal-historical aspects of each kind of person and person-making mechanism. In Table 6-1, below, I offer the sketch of a historical ontology that maps four *kinds of persons* (and rows 1A to 4B in Table 6-1; right-hand side of Figure 6-1) onto four *kinds of agents* (row B: categories 1B to 4B) and four broad categories of *person-making mechanisms* (row C: categories 1C to 4C; left-hand side of Figure 6-1).

The psychohistorical ontology distinguishes the mechanisms that generate the birth and development of *real persons* and their *identities* (i.e., person-making mechanisms; concepts cited in cells 1C to 4C of Table 6-1) from the mechanisms that generate the experience of, and beliefs about *apparent persons* (right-hand side of Figure 6-1; and concepts cited in cells 1D to 4D in Table 6-1). I use the term *apparent person* to refer to illusory and delusional phenomena in which a learner attributes agency or personhood to an entity that is in fact not an actual person – that is, an entity that is not an instance of any real person kind.

As denoted in Column 1 of Table 6-1, promoters of the *biological approach* to personal persistence draw from research on the mechanisms that cause the life of each individual

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[59] The strategy is *psychohistorical* in the technical sense discussed above, which refers to a method or meta-heuristic that combines mechanistic and contextualistic accounts. The historical ontology of person kinds that I defend derives from a psychohistorical strategy based on three hypotheses. First, prominent naturalistic ontologies of personal persistence (e.g., the biological and psychological approaches to personal persistence) specify criteria of human personhood in terms of *causal aspects* of individuals of different kinds. These causal aspects either *assume or specify mechanisms of persistence*, which are what I refer to as "person-making mechanisms" of different kinds. Second, I interpret prominent ontological accounts of personal persistence and personal identity as assuming that individuals of specific person kinds supervene on the unique context-specific and causal histories of such persistence mechanisms (i.e., the causal history of person-making mechanisms). Thus, as predicted by some contextualistic strategies (chapter 5), the consideration of the history of these different persons and person-making mechanisms leads to the analysis of causal histories that are unique to particular environmental, cultural, and historical contexts. Lastly, on this account, the phenomena that are described in terms of personal and social *identities* are the outcome of the activities of persistence mechanisms and person-making mechanisms.

organism of the human species. A broad range of mechanisms has been considered to explain the individuality of the human organism. These mechanisms include the systems of genetic inheritance and development (Lewontin, 2000; Wilson, 2005), as well as systems regulating metabolic and vital functions such as the brainstem (Olson, 1997a: 131 ff.) and the immune system (Pradeu, 2012).

As specified in Column 2, advocates of the *psychological approach* to personal persistence typically refer to research on a different set of mechanisms. They focus on mechanisms that cause an individual's mental continuity, or perhaps that individual's appearance of mental continuity. Shoemaker (1984), a philosopher who attempted to formulate a materialistic and naturalistic account of psychological persons, focuses his ontological analysis on the capacity to "remember from the inside" (Shoemaker, 1984), which he describes as a chain of memory-connected person stages (Shoemaker, 1970). Although based on a different methodology, like Shoemaker, several psychological theories of the person understood as *self* have also focused on the analysis of the autobiographical continuity enabled by the mechanisms of autobiographical memory (e.g., N. R. Brown et al., 2012; Conway, 2005).

As specified in Column 4, advocates of social and normative approaches to personal persistence (e.g., Christman, 2009) rely on research on the social mechanisms that cause the social persistence of social persons and their normative actions or propensities. These include the systems that produce in-group cooperation and altruism.

	1A. **Person as organism**; *organismic identity* of a human individual; organismic persistence or continuity	2A. **Psychological person**; *psychological identity*, identity of the psychological self; psychological persistence or continuity	3A. **Person as intentional agent and planner**; *agentive identity*, identity as an intentional agent; agentive persistence or continuity	4A. **Social, legal, and normative persons**; *social identity* of an individual, group entity, or an institutional entity; social and institutional persistence or continuity
A. Types of persons and identities				
B. Agent type	1B. **Human organismic life, living agent**	2B. **Psychological agent**	3B. **Intentional agent**	4B. **Social agents, group agents, corporate agents**
C. Plausible or real, historical cases, person-making mechanisms	1C. Phenomena of, and mechanisms producing: **a**. Human *organisms and their parts*, including genes, cells and germ cells (Mayr, 1982: Ch. 15), human organs. **b**. The *unique causal history and characteristics* of an individual human organism (e.g., DNA, fingerprints), organism as an individual substance (e.g., Leibniz).	2C. Phenomena of, and mechanisms producing: **a.** *Psychological continuity*, causal and historical connection between mental states or "person stages" that are descending from one another (Shoemaker, 1984). **b.** *Sameness of consciousness* (Locke, 1689/1975), unity of consciousness (Kant, 1781-1787/1998) and self-consciousness. **c.** Capacity to *"remember from the inside"* (Shoemaker, 1984): a chain of memory-connected person stages (Shoemaker, 1970); autobiographical continuity ensured by the mechanisms of autobiographical memory (N. R. Brown et al., 2012; Conway, 2005). **d.** The ability to express a *narrative self* (Christman, 2009; DeGrazia, 2005; Schechtman, 1996). **e.** The *unique causal history* and characteristics of an individual mind as an individual substance (Leibniz)	3C. Phenomena of, and mechanisms producing: **a**. Mental causation, causation of actions by beliefs and desires (Davidson, 1980/2001), or intentions (Anscombe, 1957/1963; Malle, Moses, & Baldwin, 2001). **b**. Agents with the capacity to plan their actions (Bratman, 1987), to act on the basic of deliberation (practical reason) and decision-making. **c**. Capacity for autonomy, human autonomous decision and mechanisms of autonomy (Christman, 2009; Dennett, 1984; Mackenzie, 2008). **d**. Human capacity for reflective self-assessment; capacity for "second-order volitions" (Frankfurt, 1971). e. The capacity to live a good live defined according to a particular historical framework (Taylor, 1989). **e**. The *unique causal history* and characteristics of an individual decision-maker.	4C. Phenomena of, and mechanisms producing: **a**. A social person *qua* set of social relations (Christman, 2009). **b**. A group performing a *collective action* (List & Pettit, 2011; Morrow & Fiore, 2013). **c**. A group agent. **d**. A legal or judicial person. **e**. The *unique causal history* and characteristics of a social, corporate, or legal agent.
D. Apparent, illusory cases (apparent-agents mechanisms)	1D. Phenomena of, and mechanisms producing: **a**. Non-human entities that appear to be living human organisms: (i) Non-organismic displays that cause an impression of seeing a moving human organism (Johansson, 1950, 1973). (ii) Children's animistic and anthropomorphic interpretations (Piaget, 1927/1977). (iii) Non-living mimics and doppelgängers of human organisms (e.g., anthropomorphic doll). **b**. Mimics of biological organisms and biometric markers (e.g., forgery of a set of fingerprints).	2D. Phenomena of, and mechanisms producing: **a**. Apparent history of continuous psychological states and attitudes of human minds (Heider & Simmel, 1944); illusion of psychological continuity; illusory attribution of mental histories to non-human events or artefacts (Guthrie, 1993). **b**. Illusory or *apparent unity of consciousness* and self-consciousness. **c**. Illusory or *apparent continuity in memory*; erroneous autobiographical memory, as in artificially implanted false memories (Shoemaker, 1984). **d**. *Apparent narrative self* (e.g., a talking doll); propensity to express false narratives about oneself (e.g., an impersonator's narratives). **e**. Illusory or *apparent psychological individuality*.	3D. Phenomena of, and mechanisms producing: Illusory feeling of causing an intentional action. **a**. Illusory or *apparent mental causation*; illusion of mental causation child cognition (S. C. Johnson, Booth, & O'Hearn, 2001); mistaken attribution of individual agency (e.g., the attribution to du Tilh of Martin Guerre's agency). **b**. Illusory or *apparent planning and decision-making*. **c**. Illusory or *apparent autonomy*; illusion of free will (Wegner, 2002). **d**. Illusory or apparent second-order decision-making; illusion that a decision is based on reason (Hume, externalism). **e**. Illusory or apparent history as decision-maker; decision-maker acting as impostor, impersonating another decision-maker.	4D. Phenomena of, and mechanisms producing: a. A person whose *sociality is merely apparent*, or illusory; a radically isolated person. b. An action that is not genuinely collective; a collective activity affected by "free rider" agent (Elster, 1989; Sterelny, 2012). c. *Apparent group agent*; illusory appearance of group intentionality (Bloom & Veres, 1999). Mistaken attributions of mental states and responsibility to aggregates and collectives (Heider, 1958; E. E. Jones et al., 1971).

Table 6-1 A psychohistorical ontology of four kinds of persons, distinguished from the corresponding four kinds of apparent persons. The main text often combines the category *psychological person* (column 2) with the *intentional agent* (column 3), assuming that the latter is a subordinate category of the former.

Person-making mechanisms versus apparent-person mechanisms

Apart from the mechanisms that cause the persistence of individual persons of real person-kinds (i.e., person-making mechanisms), we need to acknowledge that some cognitive systems and social contexts produce conditions in which learners experience merely apparent persons (*apparent-person mechanisms*). From an epistemological standpoint, it is critical to distinguish the mechanisms that produce the birth and growth of *real* persons – of any kinds – from the mechanisms that represent apparent persons that do not exist as real persons (e.g., fictional characters (Skolnick & Bloom, 2006; Walton, 1990)). Conflating both types of mechanisms is an ontological confusion, which undermines the distinction between veridical and erroneous person identification.

The types of *apparent* agency denote the experience of apparent agency or apparent persons that occurs in the absence of reliable tracking of real persons. For example, according to Guthrie's (1993; 1980) theory of religion (see also the hypothesis of the hyperactive agent-detection devices: e.g., Barrett, 2000), humans have a bias toward detecting human-like agency, which can elicit attribution of *apparent* agency to objects that do not have agency (i.e., "false positives") in addition to successful detections ("hits") in the detection of real agents.

This distinction between real and apparent agency may appear unfamiliar to readers who adopt the constructivist hypothesis that humans use the mechanisms that generate the illusions of apparent agency to track real agents (Castelli et al., 2000; Heider, 1958; Heider & Simmel, 1944). However, that concern can be addressed by noting the importance of the distinction between tracking real versus apparent agents to explain errors in person identification and differentiate the person-identification mechanisms.

Why the ontic statuses of individual persons and person kinds are historical

The typology I have sketched in Table 6-1 is a contextualistic and *historical* ontology of person kinds because it describes persons and person-making mechanisms as historical entities with different causal histories. Several senses of the term "historical" are relevant to

justify this claim, depending on whether one focuses of the causal histories of individual persons or the history of person kinds. Here, I focus on the latter.

The historicality of human organisms. Consider first persons understood as *human organisms*, individuals of the species *Homo sapiens*. An important sense in which human organisms are historical entities comes from evolutionary biology. Theories of evolution by means of natural selection tell us that the ontology and lineages of living organisms can be productively described by the concept of the *tree of life*, "a network of ancestry and descent linking all organisms – all individuals as well as species – going back to a single root" (Godfrey-Smith, 2009: p. 14). The tree of life hypothesis and the hypothesis of evolution through natural selection imply that living individual organisms and species have at least four core historical characteristics.

First, the evolution of individual organisms and species is diachronic, it occurs through time and cumulative changes. Second, an organism or a species is the outcome of a *unique* network of ancestry and descent. Third, the hypothesis of evolution via natural selection suggests that the genome of an organism is at least in part the outcome of a history of adaptations. Fourth, the development of a particular living organism is the outcome of a history of interactions between the internal parts of the developing agent and physical, biological, or social environments (Lewontin, 2000). The two-way arrows at the left-hand side of Figure 6-1 refer to the history of interactions between a target person of different kinds (e.g., organism, intentional agent, social person) and that person's environment and social context.

The historicality of psychological persons and intentional agents. Several prominent hypotheses advanced to describe the mechanisms of psychological and intentional agency imply that such mechanisms are historical in at least two important senses. First, the *psychological development* of the functions and skills performed by mechanisms determining the psychological self are shaped by *a history of causal interactions* between the developing person and that person's environment. This hypothesis has been defended under a variety of guises (Fivush, Habermas, Waters, & Zaman, 2011; Karmiloff-Smith, 2009; Westermann,

Thomas, & Karmiloff-Smith, 2010). A psychological self is the product of a unique causal history of developmental interactions and learning processes. Many types of psychological skills and forms of expertise that can define a psychological self are learned in the course of a history of interactions between the learning person and that person's ecological and social context.

Second, some of the mechanisms that ensure the mental continuity of a *psychological person* or self, such as memory and identification systems, are historical in the sense that these mechanisms have the function to encode, store, and retrieve over time historical information about the self and other persons. For example, some of memory systems can keep track of biographical and historical events that define that person as a unique individual and provide a basis for narratives about the self and other persons. Investigators of memory view the psychological self as interconnected with different types of memory systems (Brook, 2014; Conway, 2005; Conway & Pleydell-Pearce, 2000). In particular, autobiographical memory, in addition to being built over the historical time of the psychological person's development, has a historical structure because one of its functions is to index past significant events of a person's individual past and collective actions (N. R. Brown et al., 2012; Fivush et al., 2011). However, this tracking process is reconstructive and, consequently, can be biased (Schacter, 1996; Schacter & Addis, 2007).

The historicality of social persons, corporate agents, and legal individuals. Several programmes of research in philosophy and the social sciences have defended historical ontologies that specify *social person*s whose existence depends on social conventions and norms specific to historical and cultural contexts (Christman, 2009; Goffman, 1956/1959; List & Pettit, 2011; Taylor, 1989). For example, an influential approach in social philosophy argues that a human individual's properties and behaviour are the outcome of a history of social relations (e.g., interactions with other persons and with institutions), and that such social history must be integrated into the ontological account of a person *qua* social person (Christman, 2009). This social account assumes that social persons are produced by the activity of social mechanisms (Hedström & Ylikoski, 2010). These social mechanisms are historical in at least two senses. First, the existence of a social mechanism of some type –

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such as a governance institution or a university – is distinctive of a particular historical and cultural context (see chapter 8). Second, the mechanisms that scaffold social persons change over time and this change is contingent on alterations in institutional and political organisations.

A related ontology holds that the nature of social persons cannot be dissociated from *normative* conceptions and evaluative practices. Normative systems involved in the production of social persons include axiological systems aimed at specifying what a good human life is (Taylor, 1989) and, more generally, systems aimed at evaluating specific social relations (Mauss, 1938/1985; Shweder, 1991). These normative accounts are conducive to a historical ontology of social persons. This is because a particular axiological system that specifies the norms of a good human life and of good social relations is typically distinctive of a particular cultural context and undergoes change that is contingent on alterations in institutional and political organisations.

Lastly, I should mention the case of institutional entities such as legal persons and corporate agents (List & Pettit, 2011). Modern states are populated with legal entities such as governmental agencies, private corporations, and non-profit multinational organisations. These corporate agents are produced by the activities of groups of intentional agents. The existence of such entities depends on legal and institutional mechanisms that assert their existence and specify norms for controlling and regulating the activities performed by such corporate agents. Like the two other types of social persons discussed above, legal persons and corporate agents are historical entities. The existence of such social persons depends on social institutions, and the latter are social mechanisms that have social, political, and legal histories.

Anti-essentialism of the historical ontology of person kinds

I will use the Table 6-1 to defend the plausibility of an anti-essentialist and pluralistic ontology of persons and person kinds. The ontology I propose is anti-essentialist because it denies that there exists an "essence" of the human person that is instantiated in each person of the human kind. For example, many philosophers assume that there can only be a single

answer in terms of necessary and sufficient conditions to the question about the essence of the human person "What is a human person?" (see, e.g., Shoemaker, 1984). In contrast to these essentialist assumptions, I doubt that an adequate answer in terms of necessary and sufficient conditions can be discovered by an enquiry guided by the essentialist heuristic. This is because the description of the different kinds of person-making mechanisms is much too complex a task to be laid out successfully in terms of conceptual analysis and definitions based on necessary and sufficient conditions.

An analysis of Table 6-1 provides an argument from contextualism to justify my anti-essentialist position. The gist of the argument is that scholars and other human learners use different concepts of persons to describe and track different kinds of persons and person-making mechanisms. This diversity is outlined in Table 6-1. Then, from that perspective, collapsing such variety into an "essence of the person" is only likely to generate conceptual confusion. In contrast to the essentialist approach, I will use the psychohistorical ontology presented in Table 6-1 to demonstrate that philosophers and other scholars have used a plurality of concepts of person, and that such concepts refer to different kinds of person and person-making mechanisms. In my view, ontologies that are sometimes seen as competing theories, such as the biological and psychological approaches to personal persistence, should no longer be interpreted as rival theories if one abandons the essentialist assumptions and methods. This is because the theories of one person kind (e.g., person-as-organism) are not theories of another person kind (e.g., person-as-psychological-agent), and one has to explain the persistence of individuals of one person kind by means of reference to person-making mechanisms specific to that person kind, as outlined in Table 6-1.

These considerations lead to two other anti-essentialist and contextualistic hypotheses. First, it is misleading to assume that scholars can specify a single "essence" of the human person by means of a single concept of person. For there is no single "thick" theoretical concept of personhood that can jointly denote and elucidate the different kinds of human persons I have distinguished: organisms, psychological persons, intentional agents, and social persons. Any concept that would reference collectively to these different kinds of persons would likely to be irreparably thin: it would suffer from a lack in specificity. Conversely, any

"thick" concept that adequately describes one of these kinds of person is unlikely to adequately describe the other kinds of persons.

Second, the concrete existence of individuals of the four person kinds does not depend on the duplication and persistence of an immutable essence. The existence of these individuals depends on the diverse causal histories of person-making mechanisms, which have the causal propensity to keep particular individuals of various person kinds alive or existing.

If the analysis is correct, it suggests that much of the social life of human learners consists in activities aimed at tracking and identifying these different kinds of persons. As I demonstrate in chapter 7, a typical human adult learner possesses capabilities for tracking and identifying individuals of a variety of person kinds, such as human organisms, intentional agents, and social agents.

6.3   Person-identification mechanisms

Let us now describe person-identification mechanisms. The point of this section is to argue that, because person kinds are diverse, learners use a diverse set of distributed mechanisms to track, identify, and control individuals of these diverse person kinds.

Distributed mechanisms and the need for a "toolbox" strategy for person identification

Some scholars assume that there exists an "all-purpose" core person-identification mechanism for that can track and identify persons.[60] Because I have identified four person kinds that have highly distinct causal and historical characteristics, I argue that the hypothesis of a core identification mechanism is implausible. For example, as I demonstrate in chapters 4 and 7, tracking the history and persistence of an individual organism is quite different a task from tracking a psychological agent or a social person like a corporation under corporate law. In contrast to the view that there is a single cognitive system for person identification, I argue

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[60] For example, theories of person identification by means of visual recognition (Bruce & Young, 1986; Clifford & Bull, 1978) or by means of an innate agency detector (Atran & Norenzayan, 2004) are not far from being committed to this hypothesis.

that person identification involves highly varied and complex behaviours and skills. For example, person identification includes phenomena such as the rapid perceptual recognition of familiar individual organisms and intentional agents, the tracking of people's identities and trustworthiness in crowded and time-constrained contexts (e.g., conferences), and the long cooperative activities involved in completing forensic identification of human remains.

Because person identification is performed in diverse contexts, where computational and social constraints vary greatly, human learners must resort to a *"toolbox" strategy for identification*, a strategy in which learners exploit the sources of evidence – or "tools" for identification – that are available to them (at the particular time and context of decision-making) to learn about a target for identification. In what follows, I propose a series of psychohistorical hypotheses and heuristics to specify the content and uses of this "toolbox" for identification.

Decomposing person-identification behaviours into tracking and interpretative mechanisms

As I noted above, the psychohistorical theory aims to combine mechanistic and contextualistic heuristics. First, the theory uses the meta-heuristic of decomposition-and-localisation (see chapter 3). In the context of the sciences of person identification, this mechanistic strategy invites researchers to decompose a learner's person-identification behaviour and skills into processes performed by specific *tracking and interpretative mechanisms*, such as those involved in recognising a target agent and reasoning about that target's causal history. Although the theoretical sketch I propose does not fully specify the mechanisms it posits, there are no principled reasons preventing scholars from seeking to explain person-identification behaviours by decomposing them into tracking and interpretative mechanisms.

Scholars have used concepts associated with the idea of *tracking a target across time* to describe various aspects of the identification of individuals and kinds.[61] Here, I use the term

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[61] The terms *tracking* (e.g., Bullot & Rysiew, 2007; Horowitz et al., 2007) and *tracing* (e.g., Rips et al., 2006) are often used to denote the ability to keep track of and identify a set of targets over a series of temporally distinct encounters.

"tracking" broadly to refer to mental and social processes that enable a learner, acting as a *tracker* (or *enquirer*), to *become sensitive* to causal processes that might have determined, currently determine, or might determine in the future the *persistence over time* and *behaviour* of an agent (the *target* of the tracker's act of identification). Examples are detailed below.

Second, the theory adopts *contextualistic heuristics and meta-heuristics*; and it aims to complement reductionistic models of person identification (e.g., those reviewed in chapter 4) with contextualistic and epistemological hypotheses about person identification. The theory is contextualistic in two senses. First, the account is contextualistic because it specifies the processes for tracking agents by reference to the learner's sensitivity to historical contexts and mechanisms (see Figure 6-1). Second, it posits that some person-identification processes can only occur in particular historical and sociocultural contexts, (are *context-specific*). The bidirectional arrows between tracking types in Figure 6-1 show that a number of tracking processes are "scaffolded" by collective and societal mechanisms (Bullot & Reber, 2013b; Sterelny, 2012; Sutton, 2010), and that many tracking functions are performed by *groups* of human agents rather than individuals in isolation (this point aims to correct the explanatory biases of individualistic models discussed in chapter 4).

The psychohistorical theory posits that person-identification behaviours comprise at least three types of tracking, based on recognition, heuristics, and explanation. Figure 6-1 and Figure 6-2 represent the corresponding tracking relations by means of "sensitivity" (dashed) arrows. Relying on the historical ontology of person kinds described above, which delineates traceable and identifiable persons and agents, the theory ascertains the limitations and epistemic power of each type of tracking (see also chapter 7).
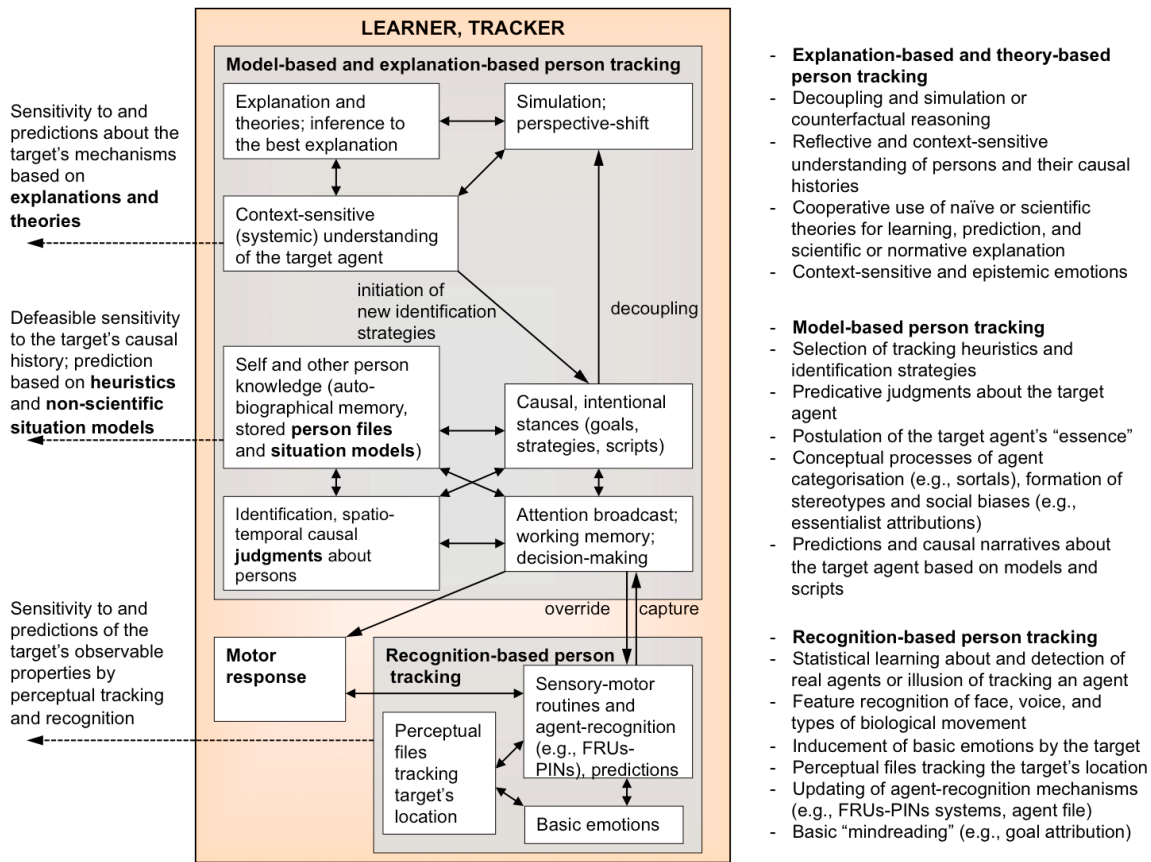
Figure 6-2 Decomposition of person identification behaviours into different types of tracking processes. This Figure expands the "learner" component from the right-hand side of Figure 6-1. See text for details.

Recognition-based person tracking

Some perceptual processes enable a learner to be sensitive to, or predict *observable* properties of a target – including the learner herself or himself – without affording in-depth knowledge of that target's unobservable causal properties and history. In the psychohistorical theory, I classify these skills as *perception-based* and *recognition-based* tracking of either a human organism or a psychological person (Figure 6-2). One of the distinctive characteristics of perception-based and recognition-based tracking is that these forms of tracking can recognise individual organisms autonomously from higher order cognition, and therefore have the profile associated with intuitive (*Type 1*) processing in dual-process theory (J. S. B. T.

Evans & Stanovich, 2013a, 2013b; Stanovich, 2004, 2011).[62] An important Type 1 candidate is face recognition. Converging evidence from several sources indicate that basic perceptual recognition of an individual face can occur autonomously from the reflective reasoning about the causal history of the agent and possess a deep phylogenetic ancestry.

First, psychological research conducted by Young et al. (1985) and Bruce and Young (1986), among others, provide evidence for distinguishing experiencing a feeling of familiarity with a person from identifying that person. Such models distinguish the basic stages of face recognition that can trigger a *feeling of familiarity* (Bruce & Young, 1986: p. 310) – or feeling of resemblance with a known person (Young et al., 1985: p. 517) – from the *decision-making process* supporting judgments about the identity of a person. This distinction corresponds to the distinction between recognition-based and heuristic-based agent tracking in the psychohistorical model.

Second, research on non-human species suggests that recognition-based tracking of individual organisms can be controlled by phylogenetically ancient Type 1 processes. For example, ethological research has provided demonstrating that a variety of social species have capabilities for individual recognition (e.g., Cheney & Seyfarth, 2007: Ch. 7; Tibbetts & Dale, 2007). In ethology, *individual recognition* refers to a subset of recognition "that occurs when one organism identifies another according to its individually distinctive characteristics" (Tibbetts & Dale, 2007: p. 529). Such organism-recognition behaviours are found in primates (Cheney & Seyfarth, 2007), dolphins (S. L. King & Janik, 2013), koalas (Charlton et al., 2011), and several species of birds (Dale, Lank, & Reeve, 2001).

In addition to face recognition, a great variety of perceptual processes for person recognition could fall into the category of Type 1 processes. For example, Type 1 candidates

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[62] Roughly, on Evans and Stanovich's (2013a) integrative account, the defining feature of *Type 1* (*intuitive*) processes are that they do not require working memory and are autonomous from higher order cognition. Typical but not necessary correlates of Type 1 processes include being fast, high capacity, parallel, nonconscious, automatic and associative. In contrast, *Type 2* (*reflective*) processes require working memory, cognitive decoupling and simulation.

include processes for *implicit perceptual learning*[63] of recurrent properties of individual organisms, visual recognition of the *kinematics* and *biomechanics* of an organism's movements (Johansson, 1973; M. H. Johnson, 2006), recognition of *sounds* such as vocalisations that signal the presence of individual organism (Belin, 2006), *biasing of attention* towards an organism's face (Morton & Johnson, 1991), triggering of *basic emotional responses* to living organisms (Ekman, 1992), and basic *sexual arousal* caused by the perception of another human organisms (Georgiadis & Kortekaas, 2010).

As I have argued in other chapters, recognition-based tracking does not seem sufficiently reliable to perform certain identification tasks. In respect to the tracking of individual organisms, organism-specific recognition is not reliable for discriminating a individual target from look-alikes that appear similar or indiscernible as a result of either contingencies and coincidences (e.g., the Will West case, chapter 2) or intentional deception (e.g., the Martin Guerre case) – see the argument from indiscernible persons and imposters in chapter 4.

More generally, a system for perceptual recognition does not appear sufficient for identifying certain kinds of persons. Consider first the identification and understanding of intentional and deceiving agents (chapters 2 and 4). Evidence from research on mindreading and social cognition imply that perceptual recognition alone is insufficient for tracking and identifying deceivers and impostors reliably. The limitations of perceptual recognition are even clearer in respect to the tracking of example of social persons I discussed above (e.g., socio-political selves, legal persons such as corporations). For example, although a learner can recognise the emblems of a corporation, a learner cannot track the causal history of that corporation by means of visual recognition alone. Tracking the history of a corporation demands that the learner acquires an understanding of the history of social conventions and norms that have led to the establishment of that legal person.

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[63] An example of this type of implicit learning is a tracker's learning leading to the pairing of a face with pleasurable or aversive odours (Gottfried, 2010)

Model-based and heuristic-based person identification

Because recognition-based tracking alone is not sufficient to satisfy the stringent task demands of agent individualisation in deceptive contexts and of the identification of some psychological and social persons, learners need other person-tracking mechanisms. As illustrated in Figure 6-2, I propose that learners use a rich "toolbox" of interpretative resources for performing context-specific comprehension and decision-making tasks during person identification. I suggest that the toolbox for interpretative identification is likely to include situation models (Zwaan & Radvansky, 1998), mindreading skills (Goldman, 2006; Heyes & Frith, 2014; Nichols & Stich, 2003), and identification heuristics (Bullot, 2015). Such interpretative mechanisms must interact with perceptual recognition and the memory networks that store information about individuals (N. R. Brown et al., 2012; Conway, 2005; Renoult, Davidson, Palombo, Moscovitch, & Levine, 2012).

In certain identification and mindreading tasks (see chapter 2), interpretative mechanisms are needed for tracking and identifying persons. Learners need interpretative models in identification tasks for the same reasons than they need interpretative models for comprehending a text (Heyes, 2012a; Heyes & Frith, 2014; Zwaan & Radvansky, 1998). Several psychologists have argued that comprehension such as the comprehension of a text depends on the construction interpretative models, which are often termed *mental models* (Johnson-Laird, 1983) or *situation models* (van Dijk & Kintsch, 1983; Zwaan & Radvansky, 1998). Zwaan and Radvansky (1998) characterise *situation models* of texts as "integrated mental representations of a described state of affairs." According to Zwaan and Radvansky (1998), situation models are constructed by means of an updating process during the reading of a text. In contrast to general memorised schemata, Zwaan and situation models represent a singular situation.[64] Similarly to a learner who comprehends a text by means of a situation

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[64] Schemata are mental representations of stereotypical situations (Alba & Hasher, 1983; Bartlett, 1930; Mandler, 1984; Schank, 1999). The classic example of a schema is Schank and Abelson's (1977) restaurant script. A script for a restaurant visit represents the agents, artefacts, entry and exit conditions, and actions typically met in the course of restaurant visits. In contrast, on Zwaan and Radvansky's account, a situation model of a restaurant visit is a

model, a learner who engages in a complex identification tasks need to build interpretative models to comprehend (i) the target's causal and social context and (ii) the context in which the learner has to perform the identification task. The use and functions of interpretative models may vary as a function of tasks demands, and a learner's assessment of the degree of uncertainty of an identification task.

Consider contexts of low-uncertainty for identification, such as contexts in which a learner needs to identify familiar persons by means of perceptual recognition. For example, consider a context in which the learner has to meet, greet, and converse with relatives and friends in a location and under circumstances that are familiar to him. In such a scenario, interpretative models of the context of the persons and their histories may trigger contextualised expectations about the identity of each target person and predictions about each familiar person's behaviour. For example, a situation model of the learner's home may prompt that learner to expect the meeting of relatives at designated locations at specific times, and that they will be easily recognised. Such model-based expectations may accelerate and bias the perceptual recognition of these persons and the interpretation of their behaviours.

A different explanatory strategy is needed to account for contexts in which a learner's identification judgement is exposed to uncertainty. Recall the examples discussed in chapter 2: uncertainty in person identification can arise from the unfamiliarity and deceitfulness of the target, or suboptimal access to or perception of the target. In such contexts, if the learner is aware of such an uncertainty, she may opt to engage in *heuristic strategies* and *explanatory stances* (i.e., strategies of enquiry; see Dennett, 1987; Keil, 2006) that draw on *situation models* of the target's context and her own situation for inferring the target's identity and causal history as organism, psychological agent, or social person. Model-based and heuristic-based inferences may provide the learner with ways to individualise or categorise the target by becoming sensitive to the target's unobservable causal history and mechanisms.

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mental representation of the states of affairs that represent a *particular* restaurant visit. Zwaan and Radvansky explain the distinction between schemata and situation models as one between types (schemata) and tokens (situation models), and suggest that schemata can be used as building blocks for the construction of situation models (van Dijk & Kintsch, 1983).

In adopting explanatory stances, in combination with situation models and perceptual-recognition, the learner may deploy first-order heuristic or second-order heuristics aimed at inferring the target's causal history and agency-making mechanisms from the target's current behaviour or the traces left by the target's earlier behaviour. In the *heuristic-based tracking* of an agent, searching and identifying an agent relies on judgments and strategies aimed at providing provisional causal narratives about the history, present, and future of the target. Here, I use the term *heuristic-based* to refer to processes of identification that primarily operate by means of learned strategies and "shortcut" rules for facilitating judgment and decision-making (Gerd Gigerenzer & Todd, 1999; Tversky & Kahneman, 1974), not heuristics used in scientific decision-making (chapter 3).

To illustrate the difference between basic recognition-based and heuristic-based tracking, consider the task of a tracker, Charles, who has undertaken to identify Clara and differentiate her from her look-alike, Lea, her monozygotic twin – that is, her "identical" twin (Segal, 1999/2000). To discriminate Clara from Lea, Charles needs to have an ability to track pertinent aspects of Clara's causal history and agency in order to discriminate her unique causal history from the causal histories of other similar individuals, especially Lea. In a number of circumstances, mere recognition-based tracking during exposure to Clara will not provide Charles with adequate sensitivity, because the similarity between the faces and voices of twins might induce considerable confusion (e.g., Sæther & Laeng, 2008).

To overcome this lack of sensitivity, Charles could resort to heuristics aimed at tracking subtle differences that monozygotic twin organisms accumulate, such as scars and reversal effects ("mirror-imaging") in their body structures (see Segal, 1999/2000: p. 22-25). Because these differences can be used for discrimination, a simple *twin-identification heuristic* consists in learning to recognise a feature that is distinctive of one of the look-alike-twins, searching for that unique feature, and ending the search when that feature has been recognised. The inference rule that guide this search can be outline as follows:

"*Distinctive feature recognition ⟶ person identification*" heuristic: If I recognise of a feature *F* uniquely possessed by individual person *P* and not by *P*'s look-alike *P'*, then that I can conclude that I am encountering *P* rather than *P'* (thus, I have performed the discriminative identification of *P*).

The use of such a heuristic demands that the learner has previously learnt about and memorised *P*'s distinctness feature, and is able to make sense of it by means of a situation model of the context in which the identification task take place. If this learning occurs implicitly, a reader might object that this heuristic-based tracking might amount to a case of recognition-based tracking. However, I think that this objection is unwarranted. It is correct that this form of heuristic-based identification does recruit perceptual recognition. However, use of the "distinctive feature recognition → person identification" heuristic is not equivalent to basic recognition-based tracking because it operates by means of an interpretative models that represents the distinctive existence of the two twins, and therefore appeals to causal assumptions and relations (about distinctive features) that need not be part of a basic process of perceptual recognition.

Although the preceding example focused on distinguishing between identical twins, the "distinctive feature recognition ⟶ person identification" heuristic can be quickly deployed for individualising persons in a variety of contexts (if at least one of its unique traits is known by the learner). For example, in his classic research on judicial proof, Wigmore (1913) discusses types of reasoning for person identification that have a similar structure to this heuristic (Wigmore, 1913: p. 63-65). Furthermore, as also noted by Wigmore, substituting a heuristic based on recognising a cluster of unique features can further improve the reliability of this heuristic.

As illustrated by these examples, in *heuristic-based tracking* involves the adoption of a causal or an intentional stance, which specifies overarching goals and predictions. The latter in turn constrain specific search, attention-guidance, and recognition processes that subserve decision-making regarding person identification. Insofar as this heuristic-based tracking involves the intentional guidance of attention broadcast, the use of working memory, and the

updating of networks of semantic information and rules for agent identification (Renoult et al., 2012), heuristic-based tracking appears to have a Type 2 profile.

Multiple sources of evidence indicate that humans rely on heuristics for tracking persons in a variety of sociocultural and historical contexts; and that such heuristics guide both successful and erroneous cases of identification of different kinds of persons. One general source of evidence is that "fast and frugal" heuristics are quick and do not exceed the computational and memory requirements of the human mind (Gerd Gigerenzer & Todd, 1999). Thus, as argued by Gigerenzer and colleagues, heuristics can be helpful for the guidance of decision-making in contexts of time pressure, such as in medical decision-making (Gerd Gigerenzer & Todd, 1999) and legal contexts such as decision-making in a court of law (Gerd Gigerenzer & Engel, 2006). Identification heuristics are also likely to be of widespread use in circumstances when a tracker seeks to identify a person who uses deception to evade identification, such as in legal reasoning (Hastie & Wittenbrink, 2006) or the tracking of criminals on the Internet (Nissenbaum, 2010).

As discussed in chapter 8, some heuristics for person identification may be inherited by processes of cultural learning and provide the novice learner with opportunities for cultural learning (Richerson & Boyd, 2005). For example, Sterelny's (2012) defends an "apprentice learning" of cultural evolution in which expert agents cooperatively transmit environmental knowledge and social norms to agents with less expertise. Identification heuristics could contribute to a learner's ability to learn skills and values shared within the community – such as learning the division of labour in social cooperation, the identification of trustworthy committed partners, the understanding of hierarchies of social control, and the ability to decipher the cultural identity of groups (Fiske, 1992; Sterelny, 2012: p. 49).

Finally, evidence for the use of heuristics also comes from research on biases induced by using heuristics. In the domain of person identification, several studies suggest that the tracking of persons' identities can be biased by contextual information about the target persons' social roles (Allen & Gabbert, 2013a), sometimes communicated by gossip

(Anderson, Siegel, Bliss-Moreau, & Barrett, 2011). Some of these biases might reflect a type of tracking that combines recognition-based tracking with heuristics.

In contrast to recognition-based identification, model-based and heuristic-based tracking provide the learner with the ability to infer *unobservable past and future states of the target* from the target's behaviour and traces left by this behaviour (Figure 6-1 and Figure 6-2). For example, if Charles knows causal facts about Clara's history, Charles' ability to differentiate Clara from her twin sister by means of the unique-feature heuristic will provide him with resources for simulating or inferring Clara's past and future unobservable behaviour and the mechanisms that underlie her actions. Such an ability to become sensitive to unobservable facts will enable the learner's ability to *assemble narratives* about the history, unobserved present, and possible future of agents. Assembling and communicating narratives about the life of a person demands integration of the different tracking modes used to gather information about that person (Fivush et al., 2011). For example, Hastie and Wittenbrink (2006) report evidence that jurors' decision-making and identifications in court are driven by narrative-based accounts of the events under scrutiny.

Meta-heuristic judgments, theories, and inferences to the best explanation

Person identification is not limited to heuristic-based tracking because identifications and predictions derived from either perceptual-recognition or heuristics can be outperformed by methods and techniques for tracking that benefit from scientific theories of the target's person-making mechanisms. Scientific theories and models can equip expert learners with robust mechanistic models and predictions of the past and future behaviour of the target's parts and person-making mechanisms. Moreover, such scientific theories and models offer means to control person-making mechanisms. Thus, simple heuristic-based person tracking is, in principle, distinct from *explanation-based person tracking* (Figure 6-2) or *theory-based* tracking. Explanation-based tracking corresponds to acts of pursuit and identification of an agent that derive from the learner's use of cultural resources such as scientific theories and inferences to the best explanation (Lipton, 1991/2004), which may include mechanistic explanations of the systems that cause the target's persistence and agency.

The psychohistorical strategy I follow suggests that one should expect a close connection between tracking methods benefiting from explanations and explanation-generating theories that are the outcome of *context-specific* and *cultural* cooperative endeavours and techniques. For example, an unexpected outcome in a process of first-order heuristic-based person tracking may invite a learner to instigate a second-order heuristic – a meta-heuristic, see chapter 3. The meta-heuristic, in turn, would suggest new explanatory strategies and produce inferences to the most likely explanation, which would be based on contrasting predictions made by different (and culturally inherited) scientific theories. Such strategies would override Type 1 recognition-based and heuristic-based tracking and take into account predictions derived from theoretical or scientific tools that are context-specific outcomes of social cooperation (Figure 6-2).

In sum, theories can provide the learner with means to better understand the relationships between (i) the alleged target's historical agency and identity and (ii) the underlying mechanisms that determine the target's historical agency and identity. Such a mechanistic understanding provides learners with means to refine predictions about the target's future behaviour or the target's interactions with its environmental and social context, subsequently providing means to intervene in or control the target's behaviour.

6.4   Novelty and advantages of the psychohistorical strategy

In this section, I argue that the psychohistorical theory presents a number of novel hypotheses and explanatory advantages when compared to either ahistorical reductionistic models or contextualistic models that disregard mechanistic explanation.

Providing an alternative to methodological solipsism and individualism

Individualistic models of person identification in psychology, which adopt a form of methodological individualism (Burge, 1986; Heath, 2005/2015) or methodological solipsism (Fodor, 1980), are not psychohistorical in the fine-grained sense defined at the outset of this chapter (i.e., aimed at combining mechanistic and contextualistic approaches). One of the most patent differences separating these approaches is that the individualistic models of

person recognition I considered in chapter 4 do not provide an ontological analysis of individual persons, person kinds, and their different causal histories. As argued in chapter 4, individualistic models of face recognition and person identification tend to consider ontological questioning about persons as a topic that lies beyond the realm of psychological explanation, and there are counterparts of this view in other domain of psychology. I have argued that such individualistic and reductionistic views can generate major biases and omissions in theories of person identification. In contrast to these omissions, the theory I propose suggests that psychological enquiry should be connected to questions of historical ontology, epistemology, and cultural enquiry that have often been neglected by traditional reductionistic theories.

An alternative to the sorts of contextualism that rejects mechanistic explanation

Many contextualistic accounts of person-identification practices (see chapter 5) are not psychohistorical because they follow a pattern opposite to the one followed by individualistic reductionism. Anti-reductionists like Geertz often describe contextualistic heuristics as incompatible reductionistic and mechanistic modes of reasoning (see the anti-reductionistic statements from Geertz quoted in chapter 5). These models adopt descriptive or anti-reductionistic methodologies that omit the consideration of the mental mechanisms investigated in psychological and reductionistic theories. With a number of other works[65] that attempt to overcome the tension between mechanistic and contextualistic approaches, the psychohistorical theory of person identification provides an alternative to anti-reductionistic contextualism. Specifically, it does so by demonstrating that it is possible to combine insights from both mechanistic and contextualistic explanations in a set of psychohistorical hypotheses.

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[65] Although I propose a psychohistorical theory, a variety of different psychohistorical accounts can be devised or might have been proposed under slightly different labels and guises. Contextualistic works that integrate psychological research on brain and mental mechanisms tend to be psychohistorical. Likewise, psychological theories of mental and social mechanisms that take into consideration the idiographic description of historical contexts tend to be psychohistorical, at least in the coarse-grained methodological sense.

To account for the cognitive and cultural diversity of person identification

Reductionistic theories of person identification driven by universalistic heuristics have not systematically investigated the context-specific and cultural *diversity* of tracking processes and social mechanisms involved in human agent-identification. In contrast, the psychohistorical theory proposes the novel contextualistic hypothesis that *heuristic-based* and *explanation-based* tracking and identification are influenced by cultural and social *factors specific to learners' historical and cultural contexts*. The theory suggests two core contextualistic predictions about heuristic-based tracking. First, socially scaffolded person identification is unlikely to be carried solely by means of the Type 1 processing of recognition-based tracking. Second, because heuristics can induce biases and errors, the social scaffolding of person identification by socially shared heuristics can come at the cost of socially spread identification errors (see the misidentification of Martin Guerre in chapters 2 and 8) and social biases (e.g., social stereotyping).

By contrast, typical universalistic models of person identification in psychology have not proposed this kind of hypothesis because they do not include a model of processing sensitive to historical and cultural contexts. For example, neither Heider's (1944, 1958) attribution theory nor the proposals from the face-recognition programme encompass an *ontological* model of the target agent's historical persistence and sociocultural context analogous to the left-hand part of Figure 6-1.

Avoiding ontological fallacies and confusions

In psychology and the cognitive sciences, universalistic theories sometimes confound real and apparent agency (Bullot, 2015). For example, what is loosely referred to as the perception of an "animate" in Heider and Simmel's (1944) work and the subsequent literature (Castelli et al., 2000) may refer to either the perception of a *real* historical agent or the perception of a merely *apparent* agent. This ambiguous use and the appeal of strong forms of psychological constructionism might have contributed to numerous epistemological puzzles in the psychological and brain sciences. These puzzles and ontological confusions can be prevented if one adopts the distinctions I offered in my ontological discussion of the different kinds of

person and person-making mechanisms, and if one remains mindful of avoiding the conflation between real and apparent persons.

Providing elements for an epistemology of person identification

In contrast to universalistic theories, the psychohistorical theory proposes novel *epistemological hypotheses* regarding the circumstances in which a human learner can track herself and other agents reliably. A core hypothesis is that a process of tracking is reliable at identifying an individual of a person kind if it can succeed in *re-tracing the causal history of the target person* (either self or other) and, in so doing, be *sensitive to person-making mechanisms* that determine this person's existence. Reliability and robustness in person identification depends on the learner's ability to become sensitive to the causal mechanisms that determine the target's persistence and causal history. The psychohistorical theory also suggests that recognition-based tracking can be complemented with heuristic-based and explanation-based tracking to secure a learner's ability to reliably track or predict the unobservable past and future stages of a person's causal history.

Conversely, the psychohistorical theory suggests a way to *classify misidentifications*. The mechanistic architecture of the theory implies that the propensity of each tracking mechanism to become sensitive to a target can be *impaired* by events such as damage to the mechanism (e.g., brain injury) or contextually inadequate use of the mechanism. This suggests that different types of agent-misidentification *errors* can be caused by dysfunctions of any of the three types of tracking posited by the theory.

Historical feelings in person identification

Similarly to the psychohistorical theory of the appreciation of artistic artefacts (Bullot & Reber, 2013a: p. 132; 2013b: p. 169), the psychohistorical theory of person identification also suggests a hypothesis about historical feelings in person identification (see chapter 9). I use *historical feelings* to refer to affective responses associated to the identification of a person that are biased by the tracker's knowledge about past historical and sociocultural contexts. For example, an experience of *nostalgia* triggered by the identification of a person who had been a close friend in the past would count as an historical feeling. Universalist theories have

demonstrated that basic emotions such as fear (LeDoux, 1996/1999) provide expressive signals and appraisals that can trigger or bias person identification (Gerrans, 2012; Langdon, 2011). However, because ahistorical and universalistic theories of person identification have not systematically investigated the relations between historical feelings and person identification, the psychohistorical approach can be used to expand their research programmes.

6.5   Recapitulation, on sensitivity in tracking

In this chapter, I have offered a blueprint for developing a psychohistorical theory of person identification. This sketch of a theory suggests a number of novel psychohistorical hypotheses, some of which are developed in greater detail in the next chapters. The motivation for the theory is to overcome the biases I have found in both reductionistic model of person identification in cognitive science (chapter 4) and contextualistic accounts of person-identification practices (chapter 5).

To develop psychohistorical research on person identification that avoids the biases discussed in chapters 4 and 5, I have suggested that the theory of person identification satisfies three requisites, or desiderata that have not been addressed in conjunction thus far. First, an integrative model of person identification needs to combine (i) an *ontological model of persons* or person kinds with (ii) an account of how learners use *person-tracking mechanisms* to become sensitive to the ontic characteristics of persons and person kinds (as defined in the ontological model). Second, it has to include an ontological discussion of the kinds of persons that can be tracked and identified, a component that I have found missing in several reductionistic accounts defended in the psychology of person identification (chapter 4). Third, it can draw from a wide range of scholarly evidence and questioning. Depending of the type of person tracking under consideration, anthropological, epistemological, historical, psychological, or sociological evidence can become relevant. For example, I have proposed that an integrative theory of person identification would benefit from integrating psychological evidence on perceptual recognition of individual faces and organisms with the social theory of causal reasoning and cultural learning about intentional agents (Bullot,

2014a). In chapter 8, I consider the explanatory advantage of taking into account recent research on cultural learning to account for person identification.

7 Integrative Tracking for Person Control

In the previous chapter, I have provided the blueprint for a psychohistorical theory of person identification and control. The account integrates a model of person kinds with a model of the tracking mechanisms that can identify individuals belonging to these kinds. The ontological model of person kinds posits that the causal histories of individual persons and person kinds depend on mechanisms of personal and social persistence (see section 6.2). The model of identification mechanisms posits that person-identification skills depend on systems for perceptual tracking, decision-making guided by heuristics and mental models, and theoretical explanations. In this chapter and the following chapters, I illustrate the fecundity of this psychohistorical approach, demonstrating that the psychohistorical framework can combine diverse research programmes that have not been integrated previously. As a first step in that direction, this chapter applies the psychohistorical approach to topics of social manipulation and person control. To develop this task, it is useful to begin with a mechanistic analysis of the relations between acts of person identification and acts of social control.

7.1 An argument from control of person-making mechanisms

Scholars and policy-makers have discussed situations in which the tracking and identification of persons is used to facilitate the control of persons. For example, a number of privacy rights advocates, such as Nissenbaum (1998, 2004) and Solove (2004, 2007), have critiqued practices of tracking and surveillance by private or governmental agencies, which result in the building of detailed information record about each of us. Solove describes our information age as the era of the rise of "digital dossiers." In his sense, a *digital dossier* is a collection of detailed data about an individual. Solove states that:

> Today, through the use of computers, dossiers are being constructed about all of us. Data is digitized into binary numerical form, which enables computers to store and

manipulate it with unprecedented efficiency. There are hundreds of companies that are constructing gigantic databases of psychological profiles, amassing data about an individual's race, gender, income, hobbies, and purchases. Shards of data from our daily existence are now being assembled and analyzed—to investigate backgrounds, check credit, market products, and make a wide variety of decisions affecting our lives. (Solove, 2004: p. 2)

To Solove, the flow of information associated with the gathering and communication of digital dossiers poses moral and legal challenges to persons' privacy rights. The debate about digital dossiers and privacy, however, is not simply addressing questions about privacy understood as the protection of data that some would like to keep secret. More fundamentally, the debate raises questions about the use or abuse of the knowledge and power that some human agents gain from accessing the personal and identifying data recorded in digital dossiers. Because some of the key functions of personal digital dossiers are to facilitate the tracking of persons, and this tracking affects the way persons are controlled, these dossiers raise the problem of the relations between tracking and person control. In the next sections, I argue that the psychohistorical framework can shed light on this problem.

What are the possible relations between person tracking and person control? The tracking of a person might be viewed as a sufficient condition or a necessary condition of control exerted on person. It is clear, however, that the tracking of a target person is not a *sufficient* condition of the causal control of that target. This is because, acting like mere passive spectators or voyeurs, human agents can track target persons without causally interfering with the behaviour and life of these targets, and thus without controlling them. For example, one can recognise someone at a large social gathering and track his movements for a few moments without interacting with that person. Thus, in itself, the mere act of tracking or identifying someone is not sufficient to exert any form of causal control of that person.

Although the tracking of a person is not a sufficient condition for controlling that person, it might nonetheless be true that the tracking of a person is a *necessary* condition of the control of that person. A possible reason for defending this claim is that, in keeping track of a

target, a learner is gathering information or knowledge that may be necessary for performing acts that successfully control aspects of the target's behaviour and life. However, even this claim might be too strong. Specifically, there might be processes of social control that succeed in controlling groups of individual persons without having to keep track of each member of the target group individually. Consider the example of authoritarian regimes.

Consider an authoritarian state that spreads fear among its citizens by means of a secret police and massive repression of political dissent. The dissemination of fear of repression and concerns about the prospect of being under surveillance among citizens of that state would lead to self-imposed behavioural censure and patterns of obedience. Patterns of obedience of that type have been have been analysed in contextualistic studies of social surveillance (Ball et al., 2012; Foucault, 1975/1977). The emergence of these patterns of obedience seems to amount to genuine forms of social control. These patterns of obedience would seemingly occur "spontaneously," among a population of individuals where only a few persons are actually being tracked and under surveillance. Consequently, it seems that the cases of spontaneous obedience are cases in which the control of persons occurs without person tracking. Thus, person tracking would not be necessary for person control.

Still, this objection can be rebutted because this type of social control is not completely independent from acts of person tracking. Although the self-censorship of many citizens might operate as disciplining and obedience practice without all citizens being continuously tracked, the authoritarian state still needs to track a subset of its citizens to enable the mechanisms of it social control. Thus, even if tracking person were not a necessary condition for person control, it appears that it is something like a strongly facilitating or enabling condition of person control.

Premise of learners' sensitivity to persistence mechanisms

To expound the conjecture of tracking for person control, the psychohistorical theory suggests an argument from the control of person-making mechanisms, which I will refer to as the *argument from mechanistic control*. The first premise of this argument refers to my

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proposal to interpret person tracking in terms of sensitivity to mechanisms of personal persistence (see chapter 6). A formulation for the premise is thus:

> *Sensitivity to person-making mechanisms*. If some learners successfully perform an act of tracking a target person T, then this act of tracking provides these learners with *sensitivity to mechanisms* that determine T's persistence and causal history – that is, sensitivity to the target's persistence mechanisms (i.e., T's person-making mechanisms).

A learner's sensitivity to person-making mechanisms afforded by tracking may take a variety of forms, some of which have been discussed in section 6.3. For example, successful perceptual recognition of a human face provides a tracker with sensitivity to facial invariants caused by muscular and skin systems (parts of the target's organism-making mechanisms). The act of basic perceptual recognition of a human organism, however, does not provide the learner with a theoretical understanding of these organism-making mechanisms. Perceptual and recognitional sensitivity are distinct from theoretical sensitivity. For example, a learner's basic experience of recognising a face does not provide the learner with a theoretical description of the physiological mechanisms that make a face a recognisable object. In contrast, sensitivity to a target's organism based on theoretical methods and inferences to the best explanation can provide learners with theoretical descriptions of the target's persistence mechanisms (e.g., a particular pattern of DNA minisatellites). I will discuss additional examples below.

Premise of the control of person-making mechanisms

The second premise of the argument posits that a learner's sensitivity to a target's persistence mechanisms facilitates conferral on the learner of the causal power to control aspects of that target's behaviour. The premise can be articulated thus:

> *Control of person-making mechanisms*. If some learners develop their sensitivity to target T's person-making mechanisms, then this sensitivity can guide and facilitate these learners' capacity to control aspects of T's persistence, development, and behaviour.

This conditional proposition is suggested by a mechanistic approach to explanation and causal intervention, which belongs to the mechanistic part of the psychohistorical theory. Let me first provide an example that illustrates the proposition.

Decision-making and controlling processes during military conflicts provide another set of examples of the links between tracking, sensitivity, and control. A military agent in action typically employs causal means (e.g., weapons, propaganda) to exert causal interventions on the behaviour of enemy targets (e.g., to deter belligerent behaviour, to dismantle an organisation by killing its leader, to kill enemy troops during an assault). Efficient military control over a strategic target T depends on having robust systems for tracking T, and therefore for tracking the persistence mechanisms that determine T's existence. This tracking is complex to achieve in a battlefield or during an international crisis because belligerents use deception and concealment to evade being tracked and targeted by their adversaries (Heuer, 1981; Mearsheimer, 2011; Whaley, 1969/2007, 1982a, 1982b). Efficiency in strategic control exerted by a military operation is dependent on the sensitivity of the apparatus used for tracking the person-making mechanism(s) that is the target of a military operation. This may hold true for evaluating both the actions of a team of military agents as well as measuring the efficiency and accuracy of weapons.

The rationale that justifies the premise in general terms derives from mechanistic considerations regarding causal manipulation. To control a feature F of the development and behaviour of a target T, a manipulator needs to intervene on the parts and processes of the mechanisms that cause F. To achieve successful focal control of feature F by means of a *causal intervention on T*, the manipulator requires sensitivity to the relevant components that produce F, the "F-making mechanisms." The manipulator's sensitivity to F-making mechanisms, however, can only be acquired by the means of processes that have the function to track and identify these F-making mechanisms.[66] Thus, by tracking of a target's person-

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[66] As I will discuss further below, because there are different sorts of sensitivity to a target's persistence mechanisms, we need to acknowledge and investigate the different sorts of sensitivity and the consequences these have on person control.

making mechanisms a manipulator acquires causal knowledge relevant to manipulating aspects of that target's behaviour. In summary, tracking a target's persistence mechanisms provides the tracker with the epistemic means necessary to guide the control and manipulation of that target. Tracking empowers the tracker-learner because tracking can disclose the procedures by means of which a target can be manipulated.

Processes of causal control in a variety of domains, ranging from action performance to social policing, can illustrate the analysis just outlined, as I will explain further below. Health care practices aimed at the biomedical control of organismic processes are particularly straightforward illustrations of this analysis. For example, if a medical team intends to causally intervene in the development of a cancerous tumour (feature *F*) that is growing in a patient, the team of clinicians must acquire contextualised knowledge on the causal history of the patient and his or her organism (i.e., the patient's organismic person-making mechanisms). In particular, the clinicians need knowledge on the mechanisms that causes the cancerous tumour in that particular organism (*F*-making mechanism). To acquire this contextualised knowledge, the medical team must therefore track some key components of the patient's persistence mechanisms. The contextualised mechanistic knowledge acquired by means of tracking can guide an intervention on the cancerous tumour. Note that the team's knowledge needs to be singular: it needs to be sensitive to the *singular* cellular mechanisms that control the development of *that particular* cancerous tumour (that *F*) in *that particular* patient's organism. I will argue that the acquisition of that kind of singular knowledge for control is routine in health care practice.

Conclusion on tracking for person control

If the two previous premises are true, then the hypothesis of tracking for person control is warranted. Specifically, these premises lead to the conclusion that follows:

> *Tracking for person control*. If some learners successfully perform an act of tracking a target person *P*, then this sensitivity can guide and facilitate these learners' capacity to control aspects of *P*'s development, persistence, and behaviour.

7.2   Tracking for control varies as function of ontological kinds

Noticeably, the generality and abstraction of the premises of the argument make the task of assessing this argument difficult. An objector may protest that key concepts are not given a sufficiently detailed specification (e.g., causal control, control). To address these concerns, the psychohistorical framework suggests the meta-heuristic strategy of using contextualistic heuristics for historicising the argument's mechanistic premises. The next sections will demonstrate the virtue of this contextualisation. As a first step toward implementing this strategy, I first need to emphasise that manipulators must adjust their strategies of tracking for person control as a function of person kinds and contexts. Among the accounts of person identification that have come close to this idea is Strawson's (1959) theory, which I discuss next.

Comparison with Strawson's theory of persons person and identification

Strawson (1959) argues that there would be no need of *ascribing one's own states of consciousness* to anything, unless one also ascribed states of consciousness to other individual entities of the *same type* as that thing to which one ascribes one's own states of consciousness (e.g., 1959: p. 103-104). Individual entities of that type are *persons*. For this dual ascription to be possible (i.e., self-ascription and ascription to others of consciousness), Strawson argues, the ontology of the individuals concerned (i.e., persons) must be of a certain unique type: "of a type, namely, such that to each individual of that type there must be ascribed, or ascribable, *both* states of consciousness *and* corporeal characteristics" (Strawson, 1959: p. 104). This claim connects to Strawson's thesis that the basic targets of our reference practices are corporeal (or material) particulars (see section 1.2, chapter 1).

Strawson holds that persons are the only kind of entity that can be, and *must be* described by means of both *material predicates*, which he refer to as *M-predicates*, and *mental-person*

predicates, which he calls *P-predicates*.[67] Thus, Strawson claims that the concept of person is primitive and twofold, as follows:

> (…) the concept of a person is to be understood as the concept of a type of entity such that *both* predicates ascribing states of consciousness *and* predicates ascribing corporeal characteristics, a physical situation &c. are equally applicable to an individual entity of that type. (Strawson, 1959: p. 104)

On Strawson's account, human learners track and identify other persons by means of judgments ascribing both material predicates and mental predicates to individual entities that mandate these two-dimensional ascriptions. Strawson asserts that learners ascribe mental-person predicates to other individuals on the basis of observing their behaviour; and he assumes that most learners know relevance criteria that justify the ascription of the mental-person predicates.

This conception of the person is what motivates Strawson's refutation of the philosophical doctrines denying the essential linkage between a person's conscious mental states and her bodily states (Strawson, 1959: p. 94-103). The doctrines he rejects include Cartesian dualism and the theories that defend the eliminative reduction of the self. These types of account, he argues, fail to acknowledge the "primitive" fact that, in our spatiotemporal conceptual scheme, each person should be described, and typically is identified by both material predicates and mental-person predicates.

Like Strawson's account of person identification, the psychohistorical theory I propose posits that social life among human agents requires that agents learn to keep track of multiple aspects of human individuals. This requirement obtains with respect to a wide range of social actions, many of which require the tracking of human individuals as bodies (or organisms)

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[67] Strawson introduces the two classes of predicates as follows: "The first kind of predicate consists of those which are also properly applied to material bodies to which we would not dream of applying predicates ascribing states of consciousness. I will call this first kind M-predicates: and they include things like 'weighs 10 stone', 'is in the drawing-room' and so on. The second kind consists of all the other predicates we apply to persons. These I shall call P-predicates. P-predicates, of course, will be very various. They will include things like 'is smiling', 'is going for a walk', as well as things like 'is in pain', 'is thinking hard', 'believes in God' and so on." (Strawson, 1959: p. 104)

and as psychological agents. Similarly to Strawson's twofold account, the psychohistorical theory posits that learners have to keep track of human beings as individuals belonging to several different kinds concurrently. For example, a physician may track and identify a patient as an individual who concurrently persists both as a biological organism and as a psychological agent. There are, nonetheless, several key differences between the psychohistorical account and Strawson's analysis.

Strawson holds that one can account for what persons are, and how persons are identified, by means of a theory centred on a *twofold* concept of person. In contrast, the psychohistorical ontology of persons distinguishes *at least three to four major* kinds of personal persistence mechanisms. One kind of personal persistence mechanisms is the category of mechanisms that control the cross-temporal and causal continuity of a particular *living organism* of the species *Homo sapiens* (DeGrazia, 2005; Olson, 1997a; Wilson & Barker, 2007/2013). Another kind of personal persistence mechanisms are those that control an individual's psychological history; that is, the cross-temporal and causal continuity of an individual understood as a *psychological agent or self* (an individual with mental abilities such as continuous autobiographical memories and consciousness (Parfit, 1984; Shoemaker, 1984)) or an *intentional agent* (a psychological self who has the capabilities for planning and performing actions). Finally, I distinguish the previous mechanisms from mechanisms that ensure the persistence of *social persons*. The latter refer to agents who are the products of social relations and conventions such as moral and political selves (Christman, 2009), legal persons, and group agents (List & Pettit, 2011).

As noted earlier (section 1.2 of chapter 1), an important difference is that Strawson has not engaged with the implications of person identification for person control. A related difference is that his account does not provide any ontological analysis of the persistence mechanisms of persons as either bodies or minds. That is, his account omits the description of what I coined person-making mechanisms. Moreover, Strawson singles out his twofold concept of person as a single "primitive" concept (Strawson, 1959: p. 102-104, 115-116). This implies that his account of person is monistic and committed to an essentialist conception of the human person (see chapter 6). In particular, Strawson does not seek to

explain the concept of person by means of a reference to persistence mechanisms or systems (e.g., biological and social mechanisms). In contrast, the psychohistorical theory posits that different kinds of persons exist, the persistence of which depends on specific mechanisms expounded by empirical research. In contrast to Strawson, the psychohistorical theory avoids the commitment to monism bound with an essentialist conception of person.

If the ontological pluralism of the psychohistorical account is justified, then this pluralism has an important consequence for the theory of person control, an implication that is completely screened out by Strawson's essentialist account. The psychohistorical account suggests that human learners must adapt their tracking skills, identification procedures, and intervention methods to the kind of person that they are tracking and identifying for the purpose of control. One version of this hypothesis, which is represented in Figure 7-1, consists in positing a set of *domain-specific tracking* mechanisms for identifying and controlling individuals of each person kind. Figure 7-1 represents a simplified account of the possible distinction between different forms of domain-specific tracking for control: (i) organism-specific tracking and biological control, (ii) mentality-specific tracking and psychological control, and (iii) sociality-based tracking and social control.
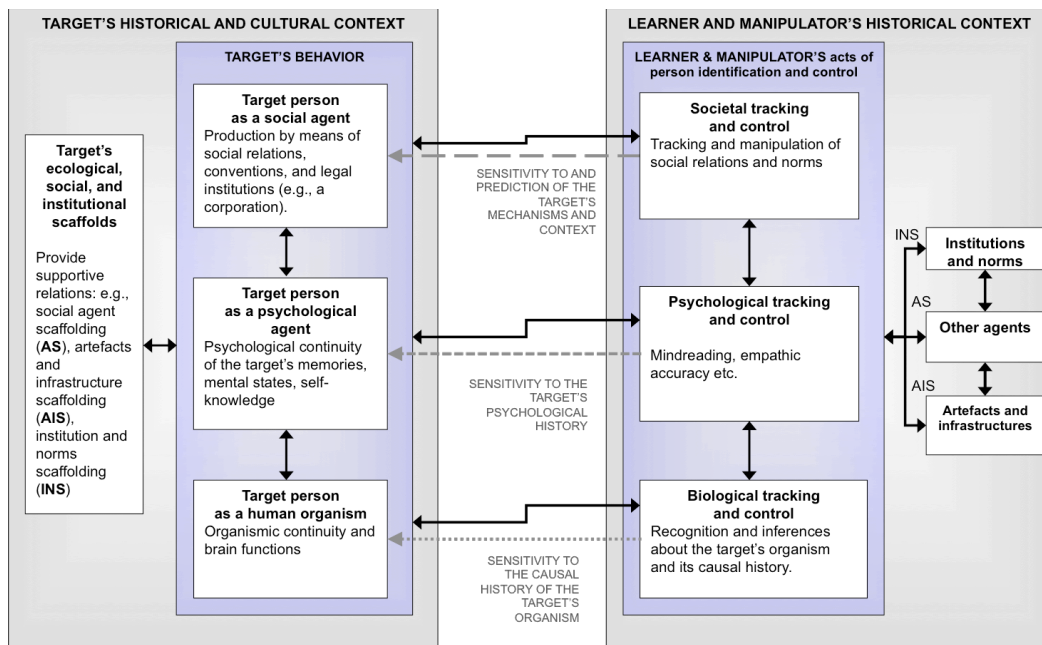
Figure 7-1 Three types of person tracking and control

Domain-specific tracking (δ-specific tracking) and integrative tracking

A clarification of the concepts of domain-specific and integrative tracking and identification is in order. To refer to an act of tracking and identification that is specific to a domain, I propose to use the expression "δ-specific tracking," which can be defined thus:

> *Domain-specific (δ-specific) tracking and control practice*. A *δ-specific* process of tracking, or control practice, is a process whose function is to develop the tracker's sensitivity to – or learning of, gathering of – information about a target within a range restricted to domain *δ*, or to intervene on target mechanisms accessible within a range restricted to domain *δ*.

The variable *δ* stands for any ontological domains; for example, *δ* could correspond to the domain of chemical mechanisms, biological individuals, psychological entities, persons, artefacts, societal relations, or cultural events. The term *target* in this specification has to be understood broadly: "target" can refer to any traceable entity – such as any individual, process, or event – that belongs to at least one ontological domain.

From the previous characterisation, it is possible to derive the concept of domain-specific act of tracking, and define it as follows:

> *Domain-specific (δ-specific) person tracking*. A *δ-specific* process of person tracking, or person control practice, is a process whose function is to develop the tracker's sensitivity to – or learning of, gathering of – information about a target person within a range restricted to domain *δ*, or to intervene on a target's person-making mechanisms accessible within a range restricted to domain *δ*.

Domain-specific tracking and control are to be contrasted with processes of integrative tracking and control. The latter may be specified as follows:

> *Integrative tracking and control practice*. A process of integrative tracking, or an integrative control practice, is a process whose function is to develop the tracker's sensitivity to – or learning of, gathering of – information about a target by means of a

combination of several forms of domain-specific tracking, or to intervene in target mechanisms under the guidance of information gathered by means of integrative tracking.

I will argue that integrative tracking has a special significance in a variety of forms of person control. Although integrative tracking for control of a person is of fundamental societal significance, it is also important to acknowledge that contexts exist in which learners perform acts of tracking, identification, and control that focused on a single domain, and are therefore domain-specific.

7.3   Person control guided by organism-specific and mentality-specific tracking

Of the different types of domain-specific person tracking, it is plausible that one of the common forms occurs when a learner tracks or manipulates the biological organism of a human target without considering that target's mental, agentive, and social properties. This type of tracking, which I refer to as *organism-specific tracking* (or *biological tracking*) (Figure 7-1, dotted arrow), occurs when a learner aims to identify or control a target individual considered from the standpoint of that individual's status as the same continuing organism (i.e., the same persisting person-as-organism).

Persistence mechanisms and organisms as natural kinds and homeostatic property clusters

A theoretically adequate characterisation of the nature of an organism is needed to develop an account of organism-specific tracking. This is a complex task. Philosophers of biology have considered a wide range of criteria for advancing explanative definitions of organisms and biological individuals (Godfrey-Smith, 2009; R. A. Wilson, 1999a, 1999b; Wilson & Barker, 2007/2013). There is, however, a strategy for addressing this task that articulates mechanistic and contextualistic insights in a productive manner (Wilson, 2005; Wilson et al., 2007). This strategy consists of positing that biological organisms present the characteristics of a natural kind in the sense defined by Richard Boyd (1991, 1999). Boyd's account defines natural kinds as *homeostatic property clusters*: properties in these clusters are homeostatic because they are products of interactions between internal mechanisms and

environmental constraints that cause their systematic clustering. Expanding on Boyd's analysis, Wilson (2005) proposed a realistic account of biological organisms, the *tripartite view*, which specifies organisms as a certain type of entity characterised by a distinctive homeostatic property cluster.

In contrast to the view that identifies organisms with any "living agents" (Wilson, 2005: p. 52-3), Wilson's Tripartite View holds that *organisms* are but a subset of existing living agents (biological individuals). The nature of a *living agent* is specified by a homeostatic *cluster* of properties (Wilson, 2005: p. 55-9), which includes possessing heterogeneous and functionally specialised parts, containing diverse organic molecules, being subjected to growth, development and death, having a capacity to reproduce, having a metabolism, and bearing environmental adaptations. Wilson's homeostatic property cluster account is not essentialist because the concept of living agent does not need to be defined by a set of necessary and sufficient conditions. No one property or particular combination of properties is predicted to be possessed by all biological agents (Wilson, 2005: p. 56). However, all such biological agents must possess some particular combination of properties from the cluster.

In Wilson's (2005) first account of his tripartite view, organisms are (i) a category of living individuals, which are distinct from other living agents because their persistence (ii) unfolds in life cycles and (iii) presents minimal functional autonomy. Organisms do not simply reproduce but also have *life cycles* that allow them to form reproductive lineages of a certain kind (Wilson, 2005: p. 59-62). A life cycle is a replicable series of events or stages between generations that a living agent necessarily undergoes, such as the formation of a fertilised egg and the death of the organism. Finally, another characteristic that differentiates organisms from other living agents is that they have some minimal level of functional *autonomy* (Wilson, 2005: p. 62-5). Organisms are not simply any living individuals; organisms exert some control over the course of their life, and are subsequently partially independent from the agency of other organisms and their environments.

Wilson and his collaborators' account predicts that a human organism is a living agent whose life follows the life cycles and the patterns of minimal functional autonomy distinctive

of individuals of the species *Homo sapiens*. Because this conception helpfully captures core ontological features of organisms, I propose to adopt it to define organism-specific tracking as follows:

> *Organism-specific tracking and identification*. Human learners perform an act of organism-specific tracking (or identification) of a target human individual when these learners are sensitive to the fact that (i) the target is an individual organism[68] *B* at some time *t* and (ii) that target is the product of the growth and development of a previously existing human organism *A* that existed at *t-**, or is the prior state of an organism *C* that grew from *B* and exists at a future time *t+**.

Likewise, *organism-specific control* can be specified as any causal manipulations that have a set of organisms – in the sense previously defined – as targets.

Mentality-specific tracking and control: the varieties of psychological tracking

Although it is possible that tracking mental states often depends on tracking organisms (Bullot, 2014a), acts of person identification that aim to keep track of an organism are in principle distinct from acts that aim to track and identify a psychological agent.

Consider this example from the forensic domain: tracking a killer's organism at a crime scene by means of an analysis of the latent fingerprints and DNA samples left by the killer's organism is a form of organism-specific tracking for social control. This tracking is part of a judicial and law-enforcement undertaking that aims to exert social control over the killer's behaviour (e.g., it aims to prevent the killer's criminal actions and prosecute the killer in court). Note that organism-specific tracking of the killer by means of fingerprints and DNA analysis does not directly provide the killers' trackers with knowledge about the contents of the killer's mental states and psychological processes during the act of killing (i.e., mentality-specific tracking). For example, the fingerprints are not good evidence for a psychiatric

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[68] In this specification, the term "organism" refers to a living individual whose life follows life cycles and patterns of functional autonomy characteristic of organisms of the species *Homo sapiens*.

diagnosis or a description of the killer's thoughts at the time of the killing. Thus, although organism-specific and mentality-specific tracking may often be integrated (see below), these two forms of tracking must be distinguished because they operate differently and support different types of sensitivity to, or inferences about a target.

I will use the expressions *mentality-specific tracking*, or *psychological tracking*, to refer to a learner's tracking of a person's mind or agency based on clues of psychological persistence (Figure 7-1). If a learner aims to search for and identify a target understood as a continuous psychological agent, then the learner has to recruit mechanisms to track the target's mind and psychological capacities. Relevant abilities for tracking an agent's mentality include inferring and simulating mental states such as beliefs (Apperly & Butterfill, 2009; Dennett, 1987), desires (Gergely & Csibra, 2003), memories (Fivush et al., 2011), and affective traits (Bombari et al., 2013) from the target's behaviours and traces left by such behaviour. Although such mechanisms for psychological tracking are not in principle necessary to perform organism-specific tracking, I argue below that a number of identification practices are made more robust by integration between organism-specific and psychological tracking.

Tracking a person understood as a psychological agent (mentality-specific tracking) requires the tracker to possess a mechanism that can represent and ascribe mental states. Such mechanisms may be a "theory of mind" mechanism (Gobbini & Haxby, 2007), a naïve theory for reasoning about rational action (Gergely & Csibra, 2003), or a cognitive mechanism sensitive to the target's autobiographical memory (Brook, 2014).

An example of psychological tracking that clearly differs from organism-specific tracking is the analysis of psychological continuity ensured by autobiographical memory. According to Brook (2014), who defends the view that such tracking is critical to interpersonal and forensic assessment, a tracker who seeks to determine whether psychological agent *A* persists as psychological agent *B* must deploy a mechanism that is sensitive to the target's autobiographical memory. It could be a mechanism guided by this heuristic:

To establish that psychological agent *A* persists as psychological agent *B*, the tracker should aim to determine that *B*'s global autobiographical memory causally connects to and depicts *A*'s earlier conscious experience.

To demonstrate that *B*'s global autobiographical memory causally connects to and depicts *A*'s earlier conscious experience is clearly a different task from that of demonstrating that *B*'s organism is a later stage of the growth of *A*'s organism. An enquirer can be in a position to demonstrate the latter (organismic continuity between *A* and *B*) without having the means to demonstrate the former (autobiographical memory continuity between *A* and *B*).

Organism-specific identification performed by means of heuristics

The perceptual recognition of a person provides perhaps the most basic form of organism-specific tracking. However, basic recognition-based tracking provides to learners limited sensitivity to a target's mechanisms for organismic persistence, and in particular it leads to errors in contexts of uncertainty.[69] Ample empirical evidence demonstrates that recognition-based tracking does not provide trackers with a robust method for identification when they have to identify a target person who is difficult to perceive, unfamiliar, and unobservable. As a result, the psychohistorical theory posits that basic recognition-based tracking does not provide a reliable process to perform person identification and control in contexts of uncertainty.

In chapters 3, 4, and 6, I argued that humans use heuristics and both interpretative and explanatory models to identify persons in context of uncertainty. Some *heuristics and models*, I now maintain, have the function to track and control a target *as an individual organism* rather than a psychological or social person.

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[69] See the argument from the discriminative identification of indiscernible persons (section 4.5) and other considerations (chapter 2). For example, visual face-recognition mechanisms perform poorly in tasks that require perceptual recognition of unfamiliar organisms, inferences about absent organisms, and identification based on complex types of traces or remains of a target's behaviour (section 4.5).

Based on my previous analysis, a meta-heuristic guiding organism-specific tracking can be expressed as follows:

> *A meta-heuristic for organism-specific tracking.* To establish that person-as-organism *A* at time *t* persists as person-as-organism *B* at time *t+**, a learner should seek evidence that the ontogeny of *B* is a causal product of the biological growth and development of *A*'s organism (one of *A*'s person-making mechanisms).

Again, this organism-specific tracking does not necessitate that the tracker becomes sensitive to the causal persistence of the target's mental states; this type of tracking requires the tracker to learn to be sensitive to the target's causal persistence as a single developing organism.

Heuristics can provide rules for making the type of inferences suggested by that meta-heuristic; illustrative examples of heuristics that serve this function are found in medical practices and in forensic identification of deceased person-as-organisms from non-living remains. I have discussed the latter in chapter 4; I will now focus on the former example.

The need for heuristics in the medical identification and control of patients originates from the complexity of identifying patients in complex sociotechnical contexts like clinics, hospitals, and field hospitals. Identifying patients and updating singular knowledge about patients is the foundation of health care practices in post-industrial societies. For example, an ambulance called for one emergency needs to pick up the patient in need, a physician's diagnosis and prescription needs to identify the patient correctly, a team of surgeons must not risk to erroneously swap patients in a busy surgery theatre, and a nurse needs to administer the right medication to the right patient at the right time.

Consider the context of hospitals. How do hospital professionals (e.g., administrative officers, nurses, physicians, surgeons, radiologists) track and identify individuals in the flow of strangers who visit hospitals?

Patients in medical treatment in a hospital are examples of individuals who must not be treated as mutually substitutable (i.e., fungible objects). In a hospital, both medical and ethical reasons make the treatment of individual patients as fungible objects unacceptable. The basic

medical reason is that medical treatments must be tailored to the singular needs of each individual patient. Typically, the action of performing a medical intervention on someone other than the person for whom the intervention was devised would violate medical ethics. In a hospital, person tracking and identification are therefore critical tasks.

Clinical practices are designed to address the particularity of each patient's illness, requests, and complaints. However, a hospital is also a highly complex and crowded social environment. Crowding increases the complexity of identification tasks, and therefore the risk of misidentification. In a hospital, staff members are continuously confronted with the task of having to identify patients who are strangers or unfamiliar acquaintances.

Research on heuristics suggests the hypothesis that staff members in a hospital have to use a variety of practical and theoretical heuristics for identifying patients and communicating about them. However, how can hospital staff be sure of the fact that they are securely keeping track of each patient when crowding overwhelms the capacity of their memory and recognition systems?

In a hospital from a twenty-first century developed country, the answer to that query, I propose, is that health care professionals' identifications are scaffolded by the use of technical systems for tracking and controlling patients. These systems ensure the traceability of each patient's identifying information and physiological states. For example, in order to ensure that the identity of each patient is not lost when the patient is transferred from one team to another, staff members interview patients, request identification documents, and consult identification tags attached to the patients' organisms (e.g., to the wrist) that may provide multiple and redundant sources of information about each patient's identity.[70]

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[70] These processes have analogous processes in other domains where learners have to keep track of non-fungible objects, as in the processes aimed at building a "chain of custody" for each piece of forensic evidence and processes aimed at assessing provenance in curatorial practices in museums (Yasaitis, 2005).
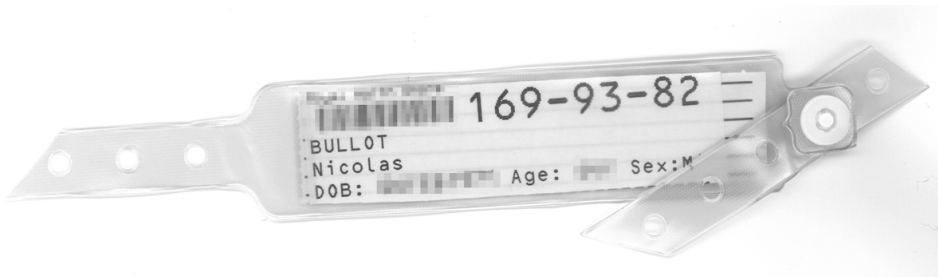
Figure 7-2 Armwrist band used for tracking a patient in the context of hospital and medical emergency (collection of the author)

Figure 7-2 presents one example of such tag, an armwrist band, which was collected by the author. Armwrist bands like this one are increasingly used as a means to facilitate tracking and identifying patients as organisms.[71] Although I think that such devices are part of a social mechanism that promotes the integrative tracking of patients in modern hospitals, it is nonetheless plausible that such artefacts tend to scaffold heuristic-based identification judgements that specifically aim at tracking persons as organisms rather than psychological agents. For example, it is likely that hospital professionals make judgement about the identity of a patient by reading the armwrist band that the person wearing the band is the person described by the band. The heuristic would look like this:

"Medical armwrist description ⬚ person-identification" heuristic: if I read on the armwrist worn by human organism *O* the proper name *PN*, the date of birth *DOB*, age *A*, and the identifier number *C*, then I can make the identification judgement that organism *O* is named *PN*, was born on *DOB*, has the age of *A*, and is being tracked in our hospital by code *C*.

This heuristic, which seems justified to use in many contexts of medical triage, is driven by organism-based tracking because it facilitate the tracking and control of an organism, and – by providing information about birth and age – informs the medical practitioner about the stage of development of that organism with respect to the life cycles of human organisms.

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[71] See (Thomas & Evans, 2004), (Lichtner, Wilson, & Galliers, 2008), (A. A. Wright & Katz, 2005), (Patterson, Cook, & Render, 2002).

However, in contrast to the examination of the medical case indexed by this code, the mere reading of the armwrist band does not provide information on the patient's mental states and social relations. Therefore, a learner's basic exposure to, and reading of the band cannot directly enable the learner's psychological or societal tracking of the patient. To expand his or her knowledge of the patient's mental and social history, a medical practitioner needs to integrate the information available from perceiving the patient and reading the band to information from the patient's medical record.

7.4 Integrative tracking for person control

Thus far, I have argued that different kinds of domain-specific tracking can contribute to enabling a learner's sensitivity to a person and provide guidance to control that person's persistence mechanisms. This account supports the argument from control of person-making mechanisms. However, consideration of domain-specific tracking in isolation offers only an incomplete explanation of the role of tracking in person control. In addition to the consideration of domain-specific tracking, person control is – I now argue – carried out by humans in practices that integrate different forms of domain-specific tracking, and therefore correspond to *practices of integrative tracking*. To justify this hypothesis, let me first consider two examples that suggest an argument for integrative tracking from limitations in control enabled by domain-specific tracking.

An argument for control guided by integrative tracking from the limitations of domain-specific tracking

To expound the significance of person identification derived from the integration of tracking across domains (integrative and multi-domain tracking), a general rationale consists in contrasting integrative tracking with practices of person identification that are clearly domain-specific, as is the case in organism-specific tracking. Consider, for example, the limits of organism-specific tracking conducted on the basis of perceptual recognition.

There is evidence that adult humans routinely learn to recognise familiar persons by means of visual, auditory, and cross-modal recognition. The tracking and recognition of

persons guides actions directed at a person's organism, thus enabling causal interactions with that organism. Although the mechanisms of perceptual recognition provide learners with a perceptual means for tracking and having motor control over individual organisms, it can be shown that the functions performed by these mechanisms do not enable robust tracking and identification of psychological agents and social persons. To illustrate this point, let me discuss a few examples.

First, consider the example of a learner – call her Eva – who recognises someone in a city bus. Eva rides the same bus line to return home after work. Several times per week, Eva has the experience of recognising another woman who takes the same bus as her. Let us assume that this unknown woman is a socialised and healthy adult individual, and that she is therefore persisting concurrently as a human organism, a psychological agent, and a social person. Let us also assume that Eva has never had social and verbal interactions with that unknown woman; and nobody has communicated information about the history of that unknown woman to Eva.

Eva could instigate a process aimed at inferring mental states from the unknown woman's movements in the bus.[72] However, if one discounts the "thin" inferences about goals that Eva can make from the unknown woman's movements, Eva's perceptual experience of recognising that woman does not provide her with a means to be sensitive to the details of that woman's history as a psychological agent. Therefore, Eva's recognition-based tracking does not count as successful case of psychological tracking (mentality-specific tracking). Likewise, Eva's perceptual experience of recognising that woman does not provide her with a reliable

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[72] Several researchers argue that both infants and adults can infer mental states (psychological tracking) by relating action, goal-states, and contextual constraints by means of the *principle of rational action*. This principle states that "actions function to realize goal-states by the most efficient means available" (Gergely & Csibra, 2003). It implies that the learner should use the tracking of observable properties of the target's organism (organism-specific tracking) and the target's context (target-context relations tracking; section 5) for inferring unobservable properties of the target's mentality (Baker, Saxe, & Tenenbaum, 2009). Thus, the principle can be used to generate heuristics for performing the psychological tracking of a target's mentality from the tracking of the target's organism and context.

sensitivity to that woman's social history and network. Therefore, Eva's recognition-based tracking does not count as successful sociality-specific tracking.

Basic visual recognition mechanisms provide Eva with defeasible evidence that she has met on several occasions (re-identified) the same female human *organism*. However, that kind of perceptual experience does not provide Eva with sensitivity to that particular woman's causal history as an individual psychological agent or a social person.[73] Eva's recognition-based tracking of the unknown women does not provide Eva with sensitivity to the causal history of the mechanisms that govern that particular unknown woman's history as either a psychological agent or a social person.

The implications of this analysis are congruent with the argument from mechanistic control. Because basic recognition-based tracking of the unknown women does not provide Eva with sensitivity to that woman's psychological and social mechanisms, recognition-based tracking does not provide Eva with knowledge that provides efficiency for manipulating that woman's behaviour.

If the unknown woman were an impostor who deceived her entourage with respect to her social identity (in a manner similar to Arnaud du Tilh's imposture, see chapter 2), Eva would have no reliable means to learn about the unknown woman's act of deception. Therefore, had Eva been given the task to intervene on the unknown woman's behaviour (e.g., to cure her

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[73] A reader might object that Eva might be able to infer that woman's psychological states from the recognition of her emotions. For example, Eva might recognise the expression of sadness (or joy) from the unknown woman's expressions and infers from that recognition that the unknown woman might be depressed (or a particularly joyful person). A rebuttal for this objection, however, follows from the lack of singular connections between Eva's conjectures and the unknown woman's causal history. From the recognition of basic emotions, Eva would only be in a position to make *general* conjectures about the unknown woman's personality trait. Such conjectures would not provide Eva with any singular knowledge of that woman's actual and unique causal history. Thus, so long as Eva does not initiate an enquiry into facts of the unknown woman's history (facts that are not directly visible), Eva's recognition-based conjectures about the unknown woman will remain general and untested. Basic perceptual recognition "from a distance" does not provide Eva with any narrative and occasions for testing any hypotheses that track the unknown woman's singular causal history and social networks.

from a disease or to influence that woman's moral practice and political beliefs), Eva's ignorance of the woman's psychological and social history would hinder her ability as manipulator of that woman's behaviour and mentality.

The sensitivity afforded by recognition-based tracking is also limited because this identification practice does not provide reliable models and descriptions of the persistence mechanisms that recognition tracks. Although Eva's recognition-based tracking can function as a means to reidentify a familiar target organism and lead to visually-guided actions that are responsive to a target (e.g., to avoid collision with the unknown woman's organism), this type of tracking does not produce any explanatory model and symbolic description of the persistence mechanisms of the unknown woman's organism and mentality.

Now contrast Eva's limited sensitivity to the unknown woman's identity and causal history to medical and legal experts who have acquired robust knowledge about the unknown woman's identity and history by means of integrative tracking and cooperation. The singular knowledge acquired through integrative tracking of the no-longer-unknown woman provides these experts with resources to guide interventions on the woman's behaviour in a causally efficient manner. For example, if a physician is part of a medical team who seeks to cure that woman's cancerous tumour, then their singular knowledge of her medical conditions will guide their attempt to gain control over the development of the tumour in her organism.

Military control, sensitivity, and the snipper's dilemma

A similar rationale can guide the analysis of military tracking for control. As noted above, there are reasons to hypothesise that, in some contexts, military control varies as a function of the sensitivity of the systems that military personnel use to track their targets. This is because military systems must be causally sensitive to their targets. If an artefact designed to be a weapon systematically failed to hit targets due to a lack in sensitivity, the artefact would fail to function as proper weapon. Likewise, if the information provided by a military spy who has infiltrated a target government or organisation is not sensitive to that target's covert decisions and actions, then this information fails to qualify as valuable intelligence gathered from espionage. Thus, this information cannot provide robust guidance for manipulating the

behaviour of the target government or organisation. Once the link between sensitivity from tracking and military control is acknowledged, it is also important to realise that the robustness of military systems for tracking typically depends on procedures of integrative tracking. Let me illustrate this point with the example of the decision-making problems faced by military snipers.

A sniper is a military or police personnel who is highly trained and skilled in precision shooting (a marksman). A sniper operates alone or with a sniper team to visually monitor enemy targets and engage targets from concealed positions or great distances. In a wide range of military and policing contexts, the strategic functions of snipers have been to protect or attack assets and targets of great value (e.g., a military squad, a politician) by monitoring, injuring, or killing with a high precision weapon (e.g., a special application rifle) any assailants who would be initiating an attack against the protected asset.

From these characteristics, it is clear that one of the sniper's missions is to manipulate an hostile target's behaviour by killing that target.[74] To kill a target with a precision rifle, the sniper typically needs to perceptually track the target's organism – an occurrence of organism-specific tracking – with a telescopic sight and pull the rifle trigger when the weapon's aiming point is aligned with the target's organism (or, if the distance is not too long, the specific organs of the target that need to be damaged to cause injury or death). By shooting and hitting accurately, the sniper produces an action that typically results in the dysfunction or loss of some of the target's persistence mechanisms (e.g., destruction of a vital organ in the target's torso and head), and subsequently the target's death. That tracking-for-killing sequence illustrates the causal sequence described by the argument from mechanistic control: tracking enables the learner's sensitivity, and the learner's sensitivity guides controlling processes and causal manipulations.

The decision-making task faced by a sniper, however, exceeds the task of deploying the tracking-for-killing sequences driven by organism-specific tracking. When the social function

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[74] Because injuring and killing a person requires causal manipulations of that person, I count the acts of injuring and killing a person as instances of behavioural control.

of the sniper's action is to neutralise genuine assailants (i.e., to avoid a genuine danger), the sniper needs to make an identification judgment under uncertainty regarding whether or not the observed target is an operational assailant or a harmless agent (who just *accidentally* happens to *look like* an assailant in that context of observation). Because battlefields place challenging tasks demands on combatants' decision-making, snipers may have little time to adjudicate whether or not the persons they are tracking with the telescopic sight of their rifle are genuine threats. Thus, both false positive and miss errors are possible outcomes of their fast-pace decision-making. This context suggests that snipers face a dilemma that might be expressed as follows:

> The Sniper's Dilemma. Should I shoot with the evidence I currently have and take the risk of a false positive error, which may result in the death of an innocent? Or, alternatively, should I hold fire to gather more evidence and risk a miss error, which may result in the loss of the protected asset?

Had a sniper omniscient knowledge, the omniscient sniper would have in his possession identifying knowledge of the causal and social history of the persons he is tracking with his telescopic sight. However, human snipers do not have that kind of knowledge. They must make identification judgements under uncertainty. In this context, how should we understand the links between the tracking performed by snipers and their decision-making about the target? The argument for integrative tracking from limitations of domain-specific tracking provides a compelling approach to this question.

Similarly to the case of Eva's organism-specific tracking of the unknown woman, there are contexts in which the sensitivity and power of a sniper limited to organism-specific tracking are outperformed by the sensitivity of a sniper whose practice is scaffolded by integrative and cooperative tracking. The main argument for this view comes from the non-transparency of the targets' social and strategic statuses in a battlefield. Because hostile agents and enemies routinely use deception and camouflage, and that organism-specific tracking does not provide robust means to identify deceiving targets, organism-specific tracking alone is not adequate to resolve all the decision-making problems faced by a sniper.

Although a sniper necessarily performs acts of organism-based tracking when observing a target with his rifle sight, the sniper needs to integrate this organism-based tracking with other forms of tracking to perform strategically adequate decision-making. For example, tracking the target's location (locational tracking) and social relations with other agents (sociality-specific tracking) can provide timely evidence and heuristics for inferring the target's social status and threat level. In numerous contexts of modern warfare (where snipers are closely linked to modern police and military units), a sniper's decision-making is trained and scaffolded by a team of operators who cooperate with snipers to develop the search and integrative tracking of targets.

A sniper team can integrate different types of domain-specific tracking carried out by different methods of information acquisition. For example, a sniper team can integrate organism-specific, mentality-specific, and sociality-specific tracking by integrating information acquired via different methods of surveillance (e.g., information from espionage and informants, aerial and satellite surveillance, thermal imaging in the battle field, analysis of causal clues in the battlefield). Given the aforementioned limitations of organism-specific tracking, this integrative tracking is going to be more accurate at discriminating targets from non-targets in a wide range of contexts. This analysis provides a rationale to explain why the use of integrative tracking methods has increased in the course of the history of military practices.

The robustness of causal interventions guided by integrative tracking

The previous examples illustrate how a hypothesis about integrative tracking lends support to the argument from mechanistic control. Integration among domain-specific tracking (integrative tracking) and scaffolding by cooperation can enhance sensitivity and robustness of the tracker's identification practice and mechanistic knowledge of the target. Such sensitivity and robustness are beneficial to the tracker's acts of control (e.g., causal interventions on a target, social manipulations of a target and a target's context). This relation between sensitivity and control is predicted by the argument from control of mechanistic-making mechanisms.

In this context, I propose the following psychohistorical hypothesis as part of the psychohistorical theory: integrative processes of person tracking and identification can provide human manipulators with types of sensitivity to a target's persistence and control mechanisms that are more reliable than the sensitivity provided by less-integrated practices of tracking and identification. In particular, sensitivity improved by integration and cooperation can provide *better guidance* and *predictions* for *causal interventions* on a person's persistence mechanisms (person-making mechanisms).[75] Consequently, sensitivity improved by integration allows learners to perform more efficacious manipulations of a target's persistence mechanisms and the behaviours that such persistence mechanisms control.

The need for increased integration among tracking and identification processes may arise when learners are confronted with a variety of circumstances in perceptual,[76] social, ethical, and political tasks. Although the need for integration may sometimes arise accidentally, it is plausible that integration is particularly needed when trackers and manipulators have to make

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[75] The previous examples suggest that person-identification behaviours involve *top-down modulatory feedback* from causal-historical heuristics on perceptual recognition. The models from the face-recognition program (chapter 4) have not sought to explain person-identification as driven by the use of causal-historical heuristics. However, recent research on top-down modulatory feedback (e.g., Bar, 2007; Hohwy, 2013; Nyamsuren & Taatgen, 2013) could provide important tools for developing a theory investigating how causal-historical heuristics can guide and bias person recognition.

A few experimental studies have reported effects of top-down modulation of the perceptual tracking of people elicited by the communication of causal-historical and social information (Allen & Gabbert, 2013b; Anderson et al., 2011; Bombari et al., 2013). For example, Allen and Gabbert (2013b) adapted an attentional tracking task (Multiple Identity Tracking paradigm; see Horowitz et al., 2007) to simulate an assault involving social roles such as assailant, bystander, policeman, and victim. They found that participants' attentional tracking was significantly biased: participants were better at tracking the assailant, bystander, and policemen than they were at tracking the victim.

[76] See, for example, Bullot (2009b, 2014a) and a number of theories of predictive coding (e.g., Hohwy, 2013).

decisions under uncertainty (e.g., identification decisions about unobservable mechanisms and mechanisms concealed by deception[77]).

Contextualising integrative tracking

Thus far, I have used a characterisation of the integrative tracking of persons that is general and abstract. I defined integrative tracking as a process or identification practice that combines different forms of domain-specific person tracking. This characterisation, a reader might object, remains too vague because many ordinary acts of person identification may seem to integrate different types of domain-specific tracking. Moreover, the objector might add, even in circumstances where an act of identification appears to be successfully performed by domain-specific tracking, such an act may indirectly benefit from the learner's skills in integrated tracking and the learner's propensity to use such integrative skills when required. Therefore, drawing the boundaries between domain-specific and integrative tracking may appear to be a complicated or intractable task.

To address the concern about vagueness, the psychohistorical approach I follow suggests to contextualise and historicise the previous characterisations in order to better describe and explain the role of integrated tracking in person control. I will develop this contextualisation with respect to a few crucial contexts for person manipulation. In these contexts, certain identification practices are made remarkable by the magnitude of their dependence on integration between different types of domain-specific tracking.

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[77] Given the psychohistorical ontology of person kinds adopted in chapter 6, the range of decision-making contexts for person identification affected by deceptive practice is quite broad. Deception in practices of person identification has been described in social circumstances as varied as everyday presentations of the self (Gambetta, 2005; Goffman, 1956/1959; Vrij, 2008) and self-knowledge (Carruthers, 2011; Mele, 1997; Trivers, 2010), commercial relations (Hetherington, 1966), political and diplomatic practice (Mearsheimer, 2011), artistic and artefact authentication (Dutton, 1983; Lenain, 2011), communication in criminal organisations (Gambetta, 2009), and a routine strategy in military conflict (Whaley, 1969/2007).

7.5 Integrative person tracking in the historical context of modern social control in nation states

To contextualise integrative tracking, and thus pave the way for "thick descriptions" of integrative tracking for controlling persons, it is useful to consider the history of social control in modern nation states. As I explain below, historical and sociological research provides a wealth of evidence to support the hypothesis that person control depends on integrative tracking in varied forms of social and governmental control. Social surveillance and control have been seen, particularly in the social sciences, as a central feature of modernity and its processes of instrumental rationalisation.[78] From the early days of modernity, administrating agents have collected and recorded civil and personal details of populations. Likewise, capitalist business organisations – another salient features of modernity – monitored and supervised employees in order to influence their productivity. As I argue below, the social control exerted by modern social agents and organisations has depended on knowledge gained from the integrative tracking of persons. For example, governments of modern states require the deployment of integrative processes of person identification and tracking to devise and enforce public policy and laws.[79]

The growth of social control in early-modern and modern states

To an evolutionary theorist adopting strong nativism, the core mental capacities that enable social identification (e.g., face recognition, mindreading) in the twenty-first century are basically the same biological mechanisms as the mechanisms that were enabling social identification at the time of our Palaeolithic forebears. Even if this hypothesis were true (and this kind of hypothesis is contested), a theory of person identification centred on this evolutionary hypothesis would not provide a comprehensive explanation of the practices of

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[78] See, for example, Weber (1956/1978), Lyon (1994, 2009).

[79] As I noted earlier (chapter 1), this requisite is not circumscribed to coercive or tyrannic governance. The need for tracking and identification of individuals derives from the link between policy-making in general and the need of social knowledge to regulate the distribution of social goods and punishments.

person identification. This is because it would omit the investigation of the cultural innovations that have changed person identification and control over the course of human history (e.g., S. A. Cole, 2001; Groebner, 2004/2007; Lyon, 1994, 2007). The psychohistorical theory provides a framework to assuage this type of omission.

Some of the most striking cultural innovations in practices of person identification for control occurred in association with the emergence of early modern and modern states and administrations.[80] Historians and social scientists have described the complex history of the historical changes in the practices of person identification and control. A wide body of work emphasises that the emergence of modern nation states has been associated with the diffusion of social control by means of bureaucratic systems, which acquire data and knowledge about individuals to guide decisions made in order to control individuals' behaviour. Historiographical accounts have converged on the idea that, since at least the early modern period, these processes of social control and surveillance have been intensified by a cluster of factors that can be described at a macro-level of analysis (in contrast to the micro-level of individualistic accounts). These factors include the growth in governmental administration (either democratic[81] or non-democratic), military organisation, urbanisation associated with industrialisation, and capitalistic economy.

While the growth of social and administrative surveillance might have begun in European states and their colonies (S. A. Cole, 2001), this growth has since become a globalised phenomenon in the post-colonial era. These phenomena have led to cultural innovations aimed at facilitating the integrative tracking of citizens and other kinds of persons. These innovations are found in core sectors of modern nation states such as military and espionage

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[80] See, for example, Weber (1904-1905/1930, 1956/1978), Foucault (1975/1977), Lyon (1994), Garland (2001).

[81] Some authors like Lyon argue that social surveillance expanded with democracy. The view is sometimes taken to originate from Alexis de Tocqueville's observation that modern mass democracies depend upon bureaucratic documentation and intervention. Ironically, suggests de Tocqueville, democracy produces privatised citizens whose paramount concern is personal welfare.

organisations, judicial and law-enforcement practices, welfare agencies and health care systems, and techno-scientific research. Tracing the historical development of social control and the cultural innovations for controlling persons is a complex task undertaken by many historians and social scientists. Although this task goes beyond the scope of the present research, I will present some significant pieces of historical evidence that lend support to the premises of the argument from mechanistic control.

Bureaucratic files and Weber's rationalisation in social control

Some of the enduring characteristics of numerous modern societies are both the pervasiveness of bureaucratic control and the economic system of capitalism. One of the best-known contributions to the analysis of these social phenomena is the contextualistic research by Max Weber (1904-1905/1930, 1956/1978). With Karl Marx and Michel Foucault[82] (1975/1977), Weber is considered by a number of sociologists[83] as one of the founders of the sociology of social surveillance and political control. For Weber, surveillance and social control are closely tied to modern bureaucracy. Modern organisations are characterised by their instrumental rationality, a characteristic that distinguishes them from previous types of social organisation. In Weber's description, the instrumental rationality of modern capitalistic bureaucracy manifests itself in the use by officials and administrators of methods that aim to optimise productivity (e.g., sophisticated accounting techniques, organisations that facilitate prudently calculated decisions and optimisation).

Although Weber does not propose a theory of person identification, his account of the rationalisation of bureaucratic administration as based on written documents and files predicts

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[82] For Foucault, modern society is itself a "disciplinary" society, in which techniques and strategies of power are always present. Though these may originally develop within specific institutions such as armies, prisons, and factories, their influence contaminates all domains of social life. In modern societies people are increasingly watched, and their activities documented and classified within contexts designed to create populations that conform to social norms. The singular knowledge of social events and human individuals is intrinsically linked with power strategies.

[83] See, e.g., Lyon (1994).

important connections between bureaucratic file processing, person identification, and person control. For example, Weber asserts that:

> The management of the modern office is based upon written documents (the "files"), which are preserved in the original or draft form, and upon a staff of subaltern officials and scribes of all sorts. The body of officials working in an agency along with the respective apparatus of material implements and the files make up a *bureau* (in private enterprise often called the "counting house," *Kontor*). Weber (1956/1978: p. 957)

In a bureau, a hierarchy of salaried officials processes files, and the management of the office follows "general rules," which "can be learned" and "knowledge of these rules represents a special technical expertise which the officials possess" (Weber, 1956/1978: p. 958). According to Weber, the bureaucratic system increases efficiency in task management and decision-making for social control. Evidence for the efficiency of bureaucratic control is that members of social organisations tend to accept the rules as rational, fair, and impartial. Another piece of evidence is that officials who lead a bureaucracy can predict with confidence that orders will be implemented in a rational and diligent manner.

Weber is often associated with social constructionism thought to be incompatible with mechanistic reductionism (see chapters 4 and 5). However, if one supplements Weber's account with an account of the practical and epistemic functions of office files, Weber's account of the functions of files in bureaucratic control lend support to the argument from mechanistic control. Let me consider further the functions of office files.

Tracking for person control and the functions of office files

As artefacts, office files have three basic functions. First, an office file has a *repository function*: a file is a repository – a container, receptacle – in which a set of documents are kept, consulted, and updated. Second, an office file has a *locational function*: the file serves as a physical receptacle for gathering documents and objects at a *unique location*. Other than practicalities (e.g., regarding the size and fit between a file and its documents), there are no principled restrictions on the formats of documents that can be included in an office file. For example, an office file may serve as receptacle for handwritten texts, drawings, charts, printed texts and data, and evidential objects of fitting size. Third, the context of an office file may

enable an *indexing function*. Because a file and its location are typically unique, a file can be named with, or linked to a unique code derived from an indexing system. This association between the file and a code provides a means to *retrieve* the file and its content within the context of a larger storage mechanism. Office files may be designed to optimise other effects, which may include organisational, updating, communicative, and collaborative functions.

By exploiting the previous functions, learners use files to perform both epistemic and collaborative functions. First, from an epistemological standpoint, the repository function may also be described as an *evidential function* (or an *information function*): an office file is a repository of different sources of evidence (or sources of information). Second, the evidential function of an office file has the propensity to support diverse epistemic and learning functions. For example, the status of the file as a repository can serve *mnemonic functions*. In making accessible a carefully chosen and positioned set of documents needed for a particular mnemonic task, a file can serve as an external memory that may be consulted at will and become closely integrated with processes of decision-making (Clark & Chalmers, 1998; Wilson & Clark, 2009). In addition to helping learners encode and recall information, the contents of an office file may prompt a learner to engage in activities such as imagining states of affairs while reading of the file content, comparing documents, the adopting explanatory stances (e.g., the intentional stance, the design stance), instigating new searches motivated by missing documents, and making identification judgments. Third, some office files can serve collaborative functions, in particular when the documents of a file are consulted and exchanged by members of a cooperative team of enquirers.

In modern states, office files routinely support senior and assistant officials in tasks aimed at tracking, identifying, and controlling persons. The repository and evidential functions enable officers to gather biographical evidence on persons who are targets of specific interventions (e.g., medical interventions on human organisms, intervention on individual citizens, interventions on groups like workers unions and companies). In *public* organisations and civil registries, files are used to keep track of births, graduations of pupils and students, the career of recruits in public offices (e.g., recruits of governmental, military, and medical public organisations), marriages, deaths, criminal offences, and legal persons (e.g., unions,

companies). In *private* business enterprises (companies, corporations), files are used by officers to perform functions such as organising appointments, tracking career development, and keeping track of employees' productivity and professional life.

Understanding the epistemic functions of office files can contribute to explaining how the bureaucratic use of office files in modern states support the integrative tracking of persons for social control.

Office-file functions and the argument from mechanistic control

The previous analysis of the functions of office files supports the argument from mechanistic control. Specifically, the analysis supports the premises of sensitivity to, and control of person-making mechanisms. Let me consider first the premise of *sensitivity to* person-making mechanisms.

In numerous bureaucratic contexts, office files and their epistemic functions provide officers with a context specifically designed to develop their learning about, and thus their sensitivity to a target and its persistence mechanisms. For example, the file of a target may contain reports about the mechanisms of a target's organism (e.g., a medical report on the target's cardiovascular system) or the target's societal persistence mechanisms (e.g., social networks that support the target's political activities). Moreover, an officer can often make substantial inferences about the target's organismic and societal persistence-mechanisms by reading a document that carries biographical information and testimonials about a target.

The organisation of an office file can be designed to facilitate the storage and retrieval of personalised information by the mental mechanisms employed for tracking and identifying persons. For example, given the importance of the visual recognition of faces in person identification, the office file of a target may be organised around a photograph of the target's face (as in Bertillon's signaletic cards or a passport). Likewise, the diverse memory structures that must guide the processes of person identification (e.g., PINs, personal semantics, mental files) can be consolidated and updated by the reading and interpretation of documents in an office file.

This analysis of the tracking functions associated with office files and bureaucratic processing is consistent with the first premise of the argument from mechanistic control. Like the premise of the sensitivity, a decomposition of the tracking functions of office files predicts that a learner must develop practices aimed at tracking a target to become sensitive to a target's history and persistence mechanisms.

The analysis of file functions also supports the hypothesis of integrative tracking for person control. An office files tends to facilitate the *integrative tracking* and identification of persons because it facilitates the integration of information gathered by means of different types of domain-specific tracking. For example, a file can function as a material receptacle for pieces of historical evidence gathered by means of (i) *organism-specific* tracking conducted by means of face-to-face interview (e.g., identification photographs, latent fingerprints) and long-distance communication with – or about – the target (e.g., description of the target's organism in correspondence, written summary of biomedical tests conducted in the past), (ii) *mentality-specific* tracking in a variety of correspondence formats (e.g., handwritten letter sent by the target, electronic communications about the target's mental states, psychiatric reports), and (iii) *sociality-specific* tracking of the target's social relations (e.g., a document of civil registry, a letter about the target's social engagements and memberships, an anonymous gossip).

Now consider the second premise of the argument from mechanistic control, which predicts that if some learners develop their sensitivity to a target's person-making mechanisms, then this sensitivity enables these learners' capacity to control features of the target's persistence and behaviour. Because office files tend to provide an optimised context for conducting the integrative tracking of persons, these files scaffold the officers' sensitivity to facts and mechanisms that need to be known in order to manipulate the target's behaviour (e.g., the behaviour of a patient, citizen, prisoner, foreign worker, or employee).

To officers who access the office file about a target, the pieces of evidence contained in the file can inform them about the target's history and persistence mechanisms, and such evidence can serve for heuristics and inferences to the best explanation aimed at acquiring

singular knowledge about the target's history and associated networks and mechanisms. In contexts where the officer's integrative tracking is successful (i.e., the tracking yields genuine sensitivity to, or true beliefs about the target), the singular knowledge gained from tracking bestows the officer with sensitivity to some of the target's persistence mechanisms. This singular knowledge, in turn, provides the officer with an opportunity to perform manipulations aimed at controlling the persistence behaviour of the target. To contextualise and justify this claim, I illustrate in the next paragraphs the role of file-based integrative tracking for control in different social domains. In particular, I consider the control of political dissent in totalitarian states, the control of criminality, the control of corporate agents, and the medical control of patients.

Integrative tracking for control by the Stasi's Zersetzung

The Ministry for State Security (German: *Ministerium für Staatssicherheit*, often abbreviated as *MfS*), commonly known as the *Stasi* (abbreviation of *Staatssicherheit*, literally "State Security"), was the official state security service of the German Democratic Republic (GDR); the MfS served the Socialist Unity Party of Germany (SED) – see Miller (1999) and Gieseke (2014). The MfS is viewed by some scholars as one of the most effective, extensive, and repressive intelligence and secret police agencies to have ever existed. The Stasi headquarter was located in East Berlin from 1950 until 1990. The MfS developed a technique of psychological harassment of suspected enemies known as *Zersetzung*. The term *Zersetzung* is borrowed from biochemistry, where it refers to bacterial decomposition. *Zersetzung* may be translated as "decomposition," "undermining," "biodegradation," and "dissolution." It provides an illustration for the argument from mechanistic control.

By the 1970s, the guidelines on social control of the MfS made clear that the methods of overt persecution, such as arrest and torture, were too crude and socially transparent to adequately serve the political aims of the MfS. In lieu of overt persecution, one of the instruction manuals of the MfS recommended a form of covert psychological harassment of perceived enemies: *Zersetzung* practices. Psychological harassment by means of *Zersetzung*

practices was far less likely to be recognised for what it was and thus less likely to provoke active resistance from its targets.[84]

Interventions associated with *Zersetzung* were typically covert psychological attacks aimed at disrupting the target's private and public life. Such attacks were guided by the singular sensitivity and singular knowledge that MfS officers had obtained by means of the cover and integrative tracking of the target and use of a MfS office file (the target's "*Stasi* file"). *Zersetzung* practices often included covert psychological attacks on the target's social network, which have included smear campaigns, dismissal of employment, sending falsified compromising photos or pornographic documents to the victim's family, mysterious phone calls, denunciation, and a variety of other acts that undermine interpersonal and self trust. *Zersetzung* practices also included manipulation of the target's intimate habitat or environmental niche, such as breaking into the target's home and subtly manipulating the target's possessions (e.g., moving furniture, altering the timing of an alarm, removing pictures from walls, and replacing one variety of tea with another). Other *Zersetzung* practices included property damage, sabotage of cars, intentional administration of incorrect medical treatment, wiretapping, bugging, or unnecessary deliveries. Targets were not always aware that officers from the MfS were the causal sources of their life's disturbance, and many targets were mentally harmed or committed suicide as a consequence of being targeted by *Zersetzung* practices.

In sum, in their *Zersetzung* practices, MfS officers adversely manipulated and psychologically and socially damaged persons who were considered as enemies of the Socialist Unity Party of Germany. Because the efficiency of these *Zersetzung* practices depended on MfS officers' sensitivity to, and singular knowledge of their target's person-making mechanisms (e.g., organismic, mental, and social persistence mechanisms), the historical data on a *Zersetzung* practices support the argument from mechanistic control.

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[84] The rationale was the targets – and possibly practitioners of – Zersetzung were less likely to be led to active resistance against the practices of Zersetzung because they would not be aware of the source of their personal problems.

Further, because MfS officers' knowledge of their targets were dependent on the file-based integrative tracking of the target, these historical data also support the hypothesis of integrative tracking for control and Weber's approach to the crucial role of office files and bureau in social control.

The files of Bertillonage

Now consider the domain of forensic identification and criminology. Bertillon's anthropometrical system for identification by means of signaletic cards (chapter 2) is another significant illustration of the role of file-based integrative tracking for social control.

Bertillon's system was the product of bureaucratic research aimed at resolving the problem of the identification of recidivists. Bertillon's anthropometric system is clearly integrative because it is designed to scaffold identification by clustering pieces of evidence caused by the persistence mechanisms of a human individual (e.g., photographs, measures, declarations). Part of a bureaucratic file system, the Bertillon cards served as foundation for the causal-historical knowledge that guided decision-making regarding the legal control of the filed individual.

As a clear indication of the fact that the Bertillon system is designed to scaffold the integrative tracking of persons, users of the Bertillon system employed facts about the measurement and causal history of an organism (organism-specific tracking) to assess the suspect's honesty (mentality-specific tracking) and declared social affiliations (sociality-specific tracking). For example, following the ancient practice of using skin marks as a means for authentication of personal identity,[85] police officers recorded on Bertillon card the signs that members of criminal organisations would have tattooed on their skin (Bertillon, 1896: p. 213-238). Although the description of a skin mark can be viewed as a mere description of the target's organism (i.e., a case of organism-specific tracking), a learner can take some tattoos and scars as evidence for making inferences to the best explanation that challenge the target's

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[85] For discussion of the role of skin marks (e.g., scars and tattoos) in person identification, see, for example, Bertillon (1896), chapter 4 of Groebner (2004/2007: ch. 4) and chapter 5 of Quinche (2006: ch. 5).

public persona and the target's self-description of her psychological and societal history. For example, criminological accounts describe how police officers have used evidence from a suspect's tattoos to challenge the target's claim that he does not belong to a criminal organisation. In doing do, the officers conduct a form of integrative tracking of the target in which organism-specific tracking supports acts of mentality-specific tracking (i.e., assessing the target's intent to deceive) and sociality-specific tracking (i.e., tracking the links between the target and other social agents).

Files for tracking and controlling group agents

Take another example of major significance in the study of social control: the control of groups and group agents. Group agents are groups or legal persons that are described as having personhood or agency (List & Pettit, 2011; Tollefsen, 2015). Consider in particular *corporations*, which are List and Pettit (2011) classify as a paradigmatic group agent in the commercial domain. A *corporation* – also described as *company* and *incorporated entity* – is a group of human agents described and authorised to act as a single *legal person* by an established legal system. Corporations are established via a distinctive legal act, which used to be a charter at the time of early incorporated entities (e.g., a charter granted by a monarch or passed by a legislature) and is more typically a legal registration in post-industrial legal systems.[86] To understand the control of corporation, the argument from mechanistic control and the hypothesis of integrative tracking for control seem relevant.

To exert control over a corporation *C*, a manipulator needs to have some sensitivity to the mechanisms that govern the persistence and collective behaviour of *C*. This sensitivity cannot be achieved by means of the organism-specific or mentality-specific tracking of a single member of the board of directors of *C*. In contrast, what the manipulator needs is the ability to identify the core social mechanisms that ensure the persistence of *C*. The persistence

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[86] For example, Hudson's Bay Company was incorporated by English royal charter in 1670 as "the Governor and Company of Adventurers of England Trading into Hudson's Bay." Typically, in recent corporations, registered corporations have legal personality and are owned by shareholders whose accountability is limited to their investment; and shareholders elect or appoint a board of directors to govern the corporation in a fiduciary capacity.

mechanisms of a corporation encompass a variety of social mechanisms, including the legal system, that regulate the ownership and legal personality of the corporation, the legal act that created the corporation, and the social relations between agents who act as shareholders and stakeholders of the corporation. To reliably identify and keep track of a corporation's history, a learner needs the capacity to be sensitive to and understand the multiple social and legal acts and relations that caused the company's history and are constantly scaffolding its existence and controlling its future. Gathering pieces of evidence about these different components of a corporation in an *office file* is one of the basic requirements for recording a corporation's history for the purpose of manipulating its future behaviour.

From office files to databases for integrative tracking

Thus far, I have presented examples in which the integrative tracking of persons was scaffolded by the bureaucratic processing of files that are typically paper or print based. However, the development of electronic systems, computers, and computational technologies during the twentieth century has led the development of other techniques of integrative tracking for person control (Chesterman, 2011; Etzioni, 2015; Lyon, 1994; Nissenbaum, 2010). Networked computers and computing technologies have provided a variety of social manipulators with potent means to store, update, integrate, and analyse evidence about persons for the purpose of social control.

Databases and computers can perform functions served by office files (Lyon, 1994), and databases[87] commonly operate as extensions of the print-based office files and bureaus described by Weber. For example, like handwritten and printed documents in office files, databases can scaffold learners' *retrieval* of information encoded in a variety of symbolic and pictorial formats. Like paper documents in office files, information retrieved from databases can scaffold a variety of learning, cognitive, and cooperative processes. However, computers,

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[87] Following Lyon (1994), I use the term *databases* to refer to the interconnected mechanisms for storing and processing data (i.e., the networked hardware, the software, and the data). Networked databases can scaffold a wide range of practices of integrative tracking of persons and social surveillance.

databases, and computational algorithms can also perform numerous functions that cannot be performed by paper-based office files. Officers can use networked databases and computing techniques to perform tracking functions and identification practices that cannot be performed by basic office files.

To illustrate some of the advantages of computational technologies, compare the surveillance techniques employed by the East German MfS – i.e., the Stasi (Gieseke, 2014; Miller, 1999) – with the computational techniques employed by twenty-first century intelligence agencies. The aim of the MfS was to identify and adversely manipulate persons perceived as enemies. One of the surveillance methods that are distinctive of the MfS's modus operandi was the integration of information gleaned by a massive shadow army of secret informers (Andrews, 1998; Miller, 1999). As input of a hierarchy of bureaucratic processes (very much in line with Weber's description), groups of informers were supervised by a MfS officer, and the latter was in charge of producing office files integrating information about persons and events deemed to be threatening.

The MfS method faced at least three challenges. First, uncooperative or biased informers would generate unreliable information. Second, MfS officers were faced with the difficult task of extracting relevant information from the massive amount of trivial reports accumulated in their offices due to the lack of sensitivity of their methods. Third, because the files were classified and accessible only from one location, each file could only be consulted by a limited number of officers. Combined together, these challenges must have hindered the capacity of MfS officers to perform the integrative tracking and identification of suspect persons in their jurisdiction.

In contemporary governmental surveillance operated by means of databases and networked computers, in contrast, these three challenges can be addressed and overcome. First, databases aggregate data issued from a variety of sensors providing measures that are not dependent on the subjectivity and intentions of human informers (Chesterman, 2011; Lyon, 1994). Networked databases can be considerably more compact and comprehensive than office files (Lyon, 1994). Second, the selection and decision-making carried out by

officers is aided by "data mining" (Etzioni, 2005; Grandy, 2006) and "dataveillance"[88] techniques that help officers search and analyse large databases for highly task-relevant information (Acquisti & Gross, 2009; E. D. Cohen, 2010; Solove, 2007). Third, depending on the structure and security settings of networks, databases are typically accessed from a greater number of access points than an office file. In some cases, information from databases is made universally accessible on the Internet. By and large, to skilled officers, the retrieval of information from a database can be much faster than the retrieval of information from hard copies in office files. Moreover, in contrast to printed evidence in an office file, data stored in networked databases can be directly available for processing by a variety of software applications and algorithms.

Integrative tracking for clinical control and biomedical manipulations

Evidence that supports both the argument from mechanistic control and the hypothesis of integrative tracking for person control can also be found in biomedical and clinical practices. In modern Western medicine, physicians conducting clinical examinations follow culturally transmitted routines for assessing patients in order to diagnose, treat, and prevent disease. These routines are procedures of integrative tracking for control.

In a typical clinical examination, the meeting between a physician and a patient can be roughly summarised as a process following a sequence of five phases. Phase 1: the physician prepares the medical encounter by examining an *office file* describing the patient's medical history (i.e., a paper-based or computerised medical record or dossier, which functions as a repository of medical evidence). Phase 2: the physician conducts a medical interview of the patient. Phase 3: the physician conducts a physical examination of the patient. Phase 4: the physician makes a series of medical decisions in consultation with the patient, which ought to follow the doctrine of informed consent. Phase 5: the medical encounter and decisions are recorded in the patient's medical file (or medical case), which was consulted by the physician

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[88] See Lyon (2007), p. 16.

prior to the medical encounter and may be communicated by other health professionals in the context of cooperative tasks.

One of the functions of the clinical encounter is to build trust between the physician and the patient (O'Neill, 2002). The duty of the physician abiding by the ethics of informed consent[89] is to develop this relationship of trust with the patient and communicate relevant medical facts to the patient. However, in addition to the function of building cooperative trust, one of the key functions of the enquiries undertaken during phases 1-3 is to develop the physician's sensitivity to, and understanding of the *patient's history* and current medical condition. In terms of the psychohistorical account, this function corresponds to the development of the physician's understanding of the patient's persistence mechanisms, and most specifically of those mechanisms that are relevant for managing the patient's health and medical condition. The decisions that pertain to the realm of medical manipulation or control ('Phase 4' above) may lead to personalised and context-specific medical interventions on the patient's organism. For example, after interviewing for symptoms and examination for signs of disease, the physician may demand medical tests (e.g., X-ray imaging, biopsy), prescribe pharmaceutical drugs, and recommend other therapies.

The procedures of medical interviews I just sketched provide support the argument from mechanistic control. The medical interview is a well-defined example of a learning process aimed at increasing a physician's sensitivity to a particular patient's persistence mechanisms. According to medical textbooks on medical interviews in clinical examination (e.g., S. Cole & Bird, 2013), the components of a medical interview and clinical encounter include recording in sequence information on the patient's biological, psychological, and social history. In a *case presentation* (i.e., "case report," or "medical write-up"), the physician records the patient's *chief complaint* (the reason voiced by the patient for the current medical visit – this includes a description of symptoms) and the patient's *history of present illness or complaint*, which include the chronological order of symptoms and their detailed

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[89] See, for example, Faden and Beauchamp (1986), Berg and colleagues (2001), and Eyal (2011/2012).

specification. Other categories in a medical record include *current activity* (occupation, hobbies), medications (what drugs the patient takes including prescribed, over-the-counter, and home remedies, as well as alternative and herbal medicines/herbal remedies), *past medical history* (concurrent medical problems, past hospitalizations and operations, injuries, past infectious diseases and/or vaccinations, history of known allergies), *patient profile and social history* (birthplace, residences, marital history, social and economic status, habits including diet, tobacco, alcohol), *family history* (listing of diseases in the family that may impact the patient, a family tree is sometimes used), *review of systems* (a set of additional questions to ask on topics which may be missed by previous enquiries followed by questions on the body's main organ systems (heart, lungs, digestive tract, urinary tract, etc.)), and *mental status*.

To conduct a clinical examination, a physician has therefore to perform enquiries combining organism-specific, mentality-specific, and sociality-specific tracking; any of these domain-specific processes being reliant on specific integrative processes. For example, it is plausible to hypothesise that the physician becomes sensitive to the patient's individual organism and its unique mechanisms (*organism-specific tracking*) by means of at least three identification mechanisms: (i) perceptual recognition enables the physician's tracking of the patient's face and organism during the interview and physical examination, (ii) model-based and heuristic-based tracking enable the physician's capacity to interpret and infer the causal history and capacities of the patient's organism, (iii) tracking derived from theories and inferences to the best explanation enable the physician's explanations of the patient's health conditions and disease.

Although medical examinations may typically focus on the physiological functions of the patient's organism, the examination nonetheless involves tracking and identification of certain traits of the patient's mentality and sociality. Like organism-specific tracking, tracking of the patient's mental states (e.g., the patient's emotions) and social relations can be performed via different tracking mechanisms discussed in chapter 6. For example, the physician's tracking of the patient's emotion may be modulated by the physician's knowledge of the patient's case. For example, by learning about a medical test bearing bad news about the patient's

health status (Baile et al., 2000; Fallowfield, Jenkins, & Beveridge, 2002; Grassi et al., 2000), the physician may experience empathy and deploy skills in interpersonal sensitivity for disclosing the bad news to the patient (e.g., particularly in cases in which the medical test predicts the patient's imminent death).

7.6   Recapitulation, on the argument from mechanistic control

To illustrate the productivity of the psychohistorical theory of person identification and control introduced in chapter 6, the overarching aim of the present chapter was to explain the benefit of combining mechanistic and contextualistic evidence in the study of social control. I have argued that the hypothesis of tracking for person control is supported by an argument from control of person-making mechanisms, which relies on two ideas. The first refers to the fact that the tracking of a person provides the tracker with sensitivity to the mechanisms that cause and scaffold a person's persistence and behaviour (i.e., person-making mechanisms). The second idea is that a learner's sensitivity to a target person's persistence mechanisms facilitates robust causal interventions in that target's persistence mechanisms. To strengthen this argument from mechanistic control, I have provided contextualistic evidence that support the argument in a variety of social contexts. First, I have suggested that the identification and control of persons may sometimes be carried out via domain-specific forms of tracking. In particular, I have distinguished organisms-specific, mentality-specific, and sociality-specific tracking. The form of tracking that can be most plausibly carried out as domain-specific tracking is organism-specific tracking. The best evidence to support the argument from mechanistic control is, however, derived through examining the varieties of integrative tracking of persons, which results from combining processes that are organisms-specific, mentality-specific, and sociality-specific tracking. In particular, on the basis of historical and sociological evidence, I have argued that person control in both biomedical and governmental control is carried out by means of integrated tracking.

8 Cultural Learning in Person Identification for Control

According to the account I defended in earlier chapters, certain processes of identification and manipulation of persons are dependent on cultural transmission and learning specific to particular historical contexts. Thus, a comprehensive theory of person identification should account for the contributions that cultural learning make to the practices of person identification and control. This objective is faced with two challenges. The first is the general problem of determining how scholars should study and explain cultural learning. The second challenge is to explain the roles of cultural learning in person identification and control. To address these challenges within the framework of the psychohistorical theory, I will outline a psychohistorical model of cultural learning and argue that the model suggests productive hypotheses about the roles of cultural learning in person identification and control.

8.1 Cultural diversity and the sciences of cultural learning

Several groups of researchers[90] have argued that what makes human evolution unique is the human capability for cultural learning. These scholars use the expression *cultural learning* to refer to the capacity of an individual or of a group of agents to learn and transmit social information and innovations. This type of learning, it is often argued, is achieved by means of enculturation, a process that encompasses a variety of human behaviours like imitation, linguistic communication, teaching, and social cooperation. Although the sciences of cultural learning and cultural change have recently provided a wealth of innovative models, these sciences still face major challenges. In particular, a variety of researchers[91] have argued that

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[90] See, for example, Tomasello (1999), Boyd and colleagues (2011), Heyes (2012a), and Sterelny (2012).

[91] See, for example, Pagel and Mace (2004), Henrich et al. (2010), and Wimsatt (2014).

the sciences of cultural learning face major challenges when engaging in the contextualistic project of formulating explanations of cultural learning that can take into account the complexity and historical contingency of cultural phenomena. For example, in the previous chapters, I have discussed the challenge of integrating the historical diversity and contingency of cultural practices of person identification and control into a theory of person identification. That problem is also encountered in the explanation of phenomena such as linguistic diversity (N. Evans & Levinson, 2009; Wierzbicka, 1992), religious diversity (Richerson & Christiansen, 2013), and artistic diversity (Bullot & Reber, 2013a; Davies, 2012; Levinson, 2002).

In chapters 4-6, I have examined one of the challenges of the explanation of complex person identification phenomena. The problem stems from the difficulty in finding productive explanations of *cultural phenomena*[92] of person identification that can jointly satisfy the explanatory aims of both mechanistic and contextualistic strategies. A typical aim of *mechanistic* accounts person identification is to assess reductionistic hypotheses and heuristics about universal mechanisms or laws that enable stable identification in humans. Such reductionistic hypotheses might justify the need to posit human universals (D. E. Brown, 1991; Fiske, 1991/1993). In contrast, the aim of *contextualistic* research strategies is rather to describe the historical variability, contingency, and context-specificity of cultural phenomena (Geertz, 1973; Smith, 2007), such as the historical diversity and complexity of religious, artistic, political, and scientific practices.

As I discussed in chapter 3, research in bounded rationality in human decision-making[93] and philosophy of science[94] suggests that scientists must use heuristics to explain complex phenomena and formulate inter-level mechanistic explanations. To address the tension

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[92] In the present chapter, I use the expression *cultural phenomena* to refer to any behaviours, events, processes, or artefacts that are produced or inherited by means of social transmission.

[93] (Cimpian & Salomon, 2014; Gerd Gigerenzer & Todd, 1999; Noles & Danovitch, 2014; Simon, 1962)

[94] See Wimsatt (1986b, 2007), Bechtel and Richardson (1993/2010), and related work in philosophy of science (Hey, 2014; Nickles, 2006).

between mechanistic and contextualistic objectives and, more generally, to mitigate the complexity in the explanation of cultural phenomena, scientists adopt various reductionist strategies and heuristics.

The heuristics of nativist accounts of cultural learning

In the sciences of cultural learning, an influential reductionistic heuristic consists in combining nativist hypotheses with either universalistic or adaptationist accounts about the architecture of human cognition. I will refer to these works as *universalistic and nativist (reductionistic) heuristics*. Accounts that adopt universalist heuristics posit the existence of biological mechanisms that are universal to all humans, such as genes and cognitive modules, and argue that such mechanisms control important aspect of the ontogeny and phylogeny of learning behaviours (Barkow et al., 1992; D. E. Brown, 2004; Buss, 1995; Cronin, 1993; Symons, 1992).

The heuristics of contextualistic accounts of cultural learning

In contrast to reductionism guided by nativist and universalistic heuristics, competing proposals have promoted the adoption of *contextualistic heuristics* (Arnhart, 2007; Dewey, 1922; Geertz, 1973; Hutchins, 2010; Pierson, 2004; Smith, 2007; Varela, Thompson, & Rosch, 1991: p. 9), which prioritise contextualistic strategies, sometimes at the expense of mechanistic strategies. *Contextualist* heuristics – also described as *particularistic* and *idiographic* strategies – typically study cultural phenomena and as they occur in unique historical contexts, using rules and methods aimed at describing historical variants of cultural behaviours and how these behaviours' characteristics depend on local historical contingencies and a particular context of occurrence (e.g., Geertz's (1973) heuristic of "thick descriptions"). To use a pair of concepts introduced by Windelband (1894/1998), contextualists often opt for heuristics that are *idiographic* (aimed at describing particular phenomena that are contingent and unique, such as historical events) rather than *nomothetic* (aimed at formulating laws to describe universals). Some of the accounts that are the most radically contextualistic tend to oppose the adoption of reductionistic and biological approaches in the study of culture (Geertz, 1973).

8.2 Dual inheritance models of cultural learning (and the gap between mechanistic and contextualistic heuristics)

In the debates about the foundations of a science of cultural learning, several groups of philosophers,[95] psychologists and cognitive scientists,[96] and social scientists[97] have proposed research strategies related to *dual inheritance models* of human cognitive evolution and *gene-culture coevolution* (Boyd & Richerson, 1985; Gintis, 2007). Typically, these dual inheritance theorists emphasise that human behaviour is the product of the interaction between biological and cultural evolution (e.g., Richerson & Boyd, 2005; Tomasello, 1999: p. 14). Dual inheritance theories thus describe human cognitive, affective, and social capacities as the product of a unique interplay between genes and culture. Although culture is constrained by genes associated with organismic and mental adaptations, they also argue that culture constrains gene expression by influencing the process of natural selection. In evolutionary terms, this approach implies that in the dynamic interplay between genes and culture, genes adapt to an evolutionary landscape[98] where cultural phenomena are a fundamental component, and the resulting genetic changes lay the basis for further cultural evolution (Gintis, 2007: p. 1-2).

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[95] For general discussion of cultural learning and inheritance, see Sterelny (2003, 2012) and Wimsatt (Wimsatt, 2014; Wimsatt & Griesemer, 2007). For discussions of dual inheritance in artistic practices, see Davies (2012) and Godfrey-Smith (2013).

[96] See Tomasello and colleagues (Tomasello, 1999, 2014; Tomasello, Kruger, Ratner, & Commentators, 1993) and Heyes and colleagues (Heyes, 1993, 2013; Heyes & Frith, 2014).

[97] See, for example, Boyd and Richerson (Boyd & Richerson, 1985; Richerson & Boyd, 2005) and Gintis (2007).

[98] Introduced by Wright (1932), an evolutionary landscape – or fitness landscape – is a metaphor used to describe, and represent visually by means of graphs the processes of evolution (e.g., natural selection and genetic drift) acting on a biological entity (e.g., a gene, protein, population, species). This entity can be viewed as searching or moving through a search space. In addition to a search space, an evolutionary landscape usually includes a component that refers to fitness (the "y-axis" of a graph), so that each value along the search space can result in a high or low fitness for the entity.

Models of cultural learning in developmental psychology

In psychology, Michael Tomasello (1999) was among the first researchers who developed models of human cognitive development that account for the interaction between biological and cultural inheritance in human development. For example, in a discussion emphasising that historical processes work "in a completely different time scale than evolutionary processes" (Tomasello, 1999: p. 207), Tomasello argues that the systematic adoption of nativist and adaptationist heuristics as a default explanation of human distinctiveness is:

> a lack of appreciation of the workings of human cultural-historical processes; that is, processes of sociogenesis, both in the sense of their direct generative powers and in the sense of their indirect effects in creating a new type of ontogenetic niche for human cognitive development. (Tomasello, 1999: p. 207)

In making this statement, Tomasello lays the ground for a critique of the nativist models positing that the human mind is composed of innate and universal cognitive modules. Tomasello's objection suggests that the reductionistic and universalistic heuristics that guide nativist theories of cognitive development fail to account for the control that sociocultural contexts exert on human development and learning.

As a step toward bridging the gap between universalistic and contextualistic heuristics, Tomasello (1999, 2014) and his colleagues[99] have proposed a series of models of the psycho-social mechanisms that regulate cultural transmission. Their heuristic strategy decomposes cultural-learning phenomena into a set of psychosocial mechanisms that control imitative, instructional, and cooperative practices.

At the core of Tomasello's developmental account is a psychological heuristic that localises the crucial factor controlling cultural learning into the mechanisms of imitative learning and joint intentionality. According to his developmental account, *imitative learning* plays a crucial role in children's interactions with certain types of objects, especially cultural artefacts. As children observe other people using cultural tools and artefacts, they often engage in the process of imitation in which they adopt the perspective of the user to identify

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[99] In addition to Tomasello (1999, 2014), see Tomasello and colleagues (2005; 1993).

the user's goal, what she is using the artefact for (Tomasello 1999, p. 84). According to Tomasello and colleagues (2005; 1993: p. 497-499), this kind of imitative learning *qua* cultural learning understood as shared intentionality emerges in the second half-year of the infant's life. It occurs when infants begin to engage in interactions that are triadic in the sense that they encompass the referential triangle of child, adult, and some other entity to which they are both attending – this mechanism is referred to as *joint intentionality* (Tomasello, 2000; Tomasello et al., 2005). Infants at this age begin to reliably look where adults are looking, use adults as emotional reference points, and act on objects in the way adults are acting on them.

Tomasello and colleagues (Tomasello, 1999; Tomasello et al., 1993) distinguish basic imitative learning from learning based on instruction in a pedagogical context. *Instructional learning* refers to cultural learning that is the outcome of learning undertaken under the guidance of a teacher (or model—e.g., an instructor, trainer, expert) and is often associated with the learner's understanding of the difference in expertise between the learner and the teacher. Moreover, these authors (Tomasello, 1999; Tomasello et al., 1993) distinguish cultural learning in which a learner is guided by a model or a teacher (i.e., imitative and instructional learning), from cultural learning as it occurs cooperatively among a group of agents without salient models or supervisors.

Cooperative learning in Tomasello and colleagues' sense refers to learning that takes place when cooperation between learners is not based on an asymmetric relation with respect to authority and expertise (Tomasello et al., 1993: p. 501). This kind of learning occurs when two agents work together to achieve a common goal, and, as a result of their interactions, succeed in achieving that goal. Several researchers from this field argue that cooperative learning is a fundamental driver of cultural innovation in human cultures (Boyd et al., 2011; O'Brien & Shennan, 2010; Sterelny, 2012; Tennie, Call, & Tomasello, 2009; Tomasello, 2014).

In several respects, Tomasello and colleagues' investigation of cultural learning is *psychohistorical* in the *broad* sense defined above (chapters 1 and 6) because it integrates

mechanistic heuristics for the investigation of psychological mechanisms (e.g., joint intentionality) with contextualistic heuristics (e.g., accounting for cultural transmission that is specific to a historical context for learning). However, several characteristics of Tomasello's model differ from the psychohistorical framework that I have proposed, the psychohistorical approach understood in the narrow sense.

First, although Tomasello and colleagues acknowledge the importance of historical factors for any theory of cultural learning, their programme of research remains focused on the analysis of psychological and evolutionary mechanisms such as joint intentionality and imitation, which they might count as psychological universals. Because Tomasello and colleagues' research focuses on psychological and evolutionary mechanisms, they have focused on intermediate-scale models that integrate research on psychological mechanisms with research on context-specific phenomena developed by contextualists from the social sciences and the humanities (e.g., cultural anthropologists, historians, philosophers, and sociologists).

Second, in contrast to the psychohistorical theory I offered in the previous chapters, Tomasello and colleagues have not focused on the *ontological* questions associated with the historical uniqueness and contingent diversity of the social contexts in which cultural learning occurs. Programmes of research focused on the description of psychological mechanisms rarely address questions of ontology (see, e.g., my discussion of the ontology of personhood in chapters 4 and 6).

Third, and in contrast to the psychohistorical account I propose, Tomasello and colleagues have not engaged with the *epistemological* analysis of the ways in which cultural learning modulates a learner's sensitivity to, and knowledge of, cultural phenomena. This difference can be illustrated with the treatment of *imitative learning*. Imitation can contribute to other types of learning that support the acquisition of cultural information available in the learner's historical context (e.g., John imitates Mark to learn how to play didgeridoo). For example, imitation processes can be included in instructional learning, as when pupils imitate a teacher. In so doing, a learner's imitative learning can contribute to the learner's acquisition

of *skills* and forms of *knowledge* that are *context-specific* in the sense of being unique to, and distinctive of the cultural and historical context in which the learner is nurtured. For example, in the case of person identification, forensic enquirer may imitate a colleague to learn the use of latent fingerprints for person identification.

If learners can acquire context-specific skills and knowledge by means of imitation, this possibility raises epistemological questions about this type of knowledge. There is need for an *epistemological* analysis of the epistemic effects of such cultural learning. Consider again the example of identification by means of latent fingerprints: as I explained in chapter 2, cultural learning of such identification techniques raises epistemological questions about the reliability of the knowledge acquired through by means of such learning. For example, in which contexts do such culturally transmitted techniques of identification lead to reliable identifications? However, to my knowledge, the psychological models proposed by Tomasello and his colleagues have not engaged with that kind of questioning. In the next section, I provide a psychohistorical model of cultural learning designed to engage with such questions.

Sterelny's evolved apprentice learning model

Kim Sterelny's evolved apprentice model (Sterelny, 2012, 2013a, 2013b, 2014a) is another of the dual inheritance accounts[100] of human cognitive evolution that presents psychohistorical characteristics. Inspired by biological theories of niche construction (Laland, Odling-Smee, & Feldman, 2000) and gene-culture coevolution (Bowles & Gintis, 2011;

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[100] In psychology and neuroscience, Heyes (2012a, 2012b) has defended the new thinking approach to cognition, an original view that attributes a critical role to cultural evolution in human cognition and explains the specialised features of cultural learning as acquired in the course of development through mechanisms of social interaction. Heyes' view, like Sterelny's account, includes a critique of the hypothesis that the mind is comprised of genetically inherited cognitive modules, a massive modularity hypothesis that is defended by a number of evolutionary psychologists (e.g., Cosmides & Tooby, 2005) and nativist philosophers (Carruthers, 2006). In contrast to the latter nativist theories, Heyes' "new thinking" approach posits that the unique evolution of human cognitive abilities is the outcome of a set of domain-general developmental processes rather than a set of domain-specific, genetically pre-specified adaptations.

Gintis, 2007), Sterelny's model (2003, 2012, 2014b) advances both a critical and a positive proposal. First, Sterelny has offered a critique of the hypothesis that the mind is comprised of genetically inherited cognitive modules, the so-called hypothesis of "massive modularity" defended by a number of evolutionary psychologists (e.g., Cosmides & Tooby, 2005; Pinker, 1997; Sperber, 1994, 2001) and nativist philosophers (e.g., Carruthers, 2006; Carruthers, Laurence, & Stich, 2005; Nichols, 2005; Simpson, 2005). According to Sterelny's criticism, modularistic theories of universal cognitive architecture are systematically biased because they underestimate or misunderstand the roles that cumulative cultural learning plays in the evolution of human cognitive behaviour (Downes, 2013).

By contrast with theories of massive modularity, Sterelny's positive proposal is an "evolved apprentice model" investigating how our hominin ancestors acquired and transmitted cognitive and motor skills (expertise), and the complex interaction of cooperative and skilful survival strategies developed in socially structured environments (social contexts, cultural niches). On Sterelny's view (2006), *cultural inheritance* is the product of interactions between (i) human agent's mechanisms of cultural learning and phenotypic plasticity[101] and (ii) cross-generational information pooling. As the interactions between these two processes develop, Sterelny argues, humans of one generation scaffold and transform the learning environment of the next generation, thereby creating – via positive feedback loops – trans-generational exchanges of skills and practices that improve humans' survival capacity and fitness in the long term.

Sterelny's evolved apprentice model is *psychohistorical* in the broad sense (defined in chapters 1 and 6) because his model investigates the interactions between the biological and

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[101] An important element in Sterelny's proposal is the reference to *phenotypic plasticity*. According to Sterelny (2009, p. 97) "an organism is phenotypically plastic if its genome maps onto different phenotypes in different environments." Organisms tend to enhance their own fitness by adapting to the milieus that are presented to them (Sterelny, 2004). This capacity of humans to adapt to a wide range of different environments is instrumental in the realisation of long-term phenotypic changes (Richerson, Boyd, & Henrich, 2010). Phenotypic plasticity, on Sterelny's view, has allowed humans to become more adept at social learning and imitation, which were required for the reliable transmission of culture.

psychological mechanisms of cultural learning (e.g., phenotypic plasticity, imitation) and the historical contexts in which such learning occurs (i.e., environmental and social niches). Of course, as noted in respect to Tomasello and colleagues' work, Sterelny's model is not psychohistorical in the narrow sense of the psychohistorical theory of person identification introduced above. Neither Sterelny nor Tomasello and colleagues are committed to the hypotheses I advanced in chapters 2-7.

While the psychohistorical theory I introduced aims to describe forms of identification and learning that occur in modern states (see chapter 7), Sterelny's evolved apprentice model is primarily designed to explain hominin evolution as it happened in the Palaeolithic (Downes, 2013; Sterelny, 2013b: p. 40-41), an era when nation states were not in existence. Thus, Sterelny's model analyses temporal scales and contexts that do not seek to account for processes of cultural learning that are distinctive of human societies from the pre-modern and modern eras. Consequently, Sterelny's model does not investigate cultural learning in complex societies organised in institutions such as states, markets, governments, armies, churches, universities, museums, and professional corporations.[102] As a result, Sterelny's evolved apprentice model does not investigate *ontological* and *epistemological* questions that can only be relevantly raised in the context of pre-modern and modern cultures. In sum, it is beyond the scope of a model describing Palaeolithic cognitive evolution to offer an account of cultural learning that is distinctive of modern societies governed by states and complex technologies like the Internet.

Pending psychohistorical questions

The criticisms and models of cultural learning offered by Heyes, Sterelny, Tomasello, Wimsatt, and their collaborators have contributed to the development of a new interdisciplinary science of cultural learning. This interdisciplinary science is based on

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[102] This focus on the Palaeolithic or evolutionary scales is unlikely to be exclusive to Sterelny's model. To my knowledge, little research has used psychohistorical heuristics – i.e., heuristics integrating mechanistic and contextualistic approaches – to investigate processes of cultural learning that are distinctive of modern institutions.

heuristics that are psychohistorical in the broad sense (see chapters 1 and 6) because these heuristics take into account both (i) biological and psychological mechanisms that are historically stable and might be viewed as candidate universals and (ii) factors or processes that are *unique* to particular groups of humans and unique historical contexts –and thus *diverse* across different human populations and periods of hominin and human history. These heuristics propose strategies that seem suitable to mitigate the antagonism between nativist-universalistic reductionism and contextualistic heuristics described in chapters 4 and 5.

As I have argued in my discussion of Tomasello, Sterelny, and their collaborators' contributions, their models of cultural learning have not directly tackled topics of cultural learning that are psychohistorical in the narrow sense (see chapters 1 and 6). These topics include both ontological and epistemological questions. For example, what are the basic scaffolding relations and structures that compose the *cultural and historical context* in which a learner's cultural learning take place? Or, in respect to epistemology, what are the types of *sensitivity to*, and forms of *knowledge and understanding of a cultural context* that are enabled by different types of cultural learning mechanisms?

In the sections which follow, I suggest that the psychohistorical theory that I have developed to account for person identification (see chapters 6 and 7 and Bullot (2014a, 2015)) and artistic practice (Bullot & Reber, 2013a) can be revised to investigate ontological and epistemological aspects of cultural learning. Specifically, I argue that the psychohistorical theory can address some of the questions that have been overlooked by the models proposed by Tomasello, Sterelny, and their colleagues. The theory I propose suggests psychohistorical heuristics for integrating mechanistic and contextualistic heuristics, and it helps us formulate ontological and epistemological questions that have not been addressed by previous dual inheritance theories of cultural learning.

8.3   The structure of a psychohistorical theory of cultural learning

The account of cultural learning I propose is psychohistorical in the broad sense: it is an attempt to integrate biological and mechanistic heuristics from the cognitive sciences and

contextualistic enquiries developed in philosophy and the social sciences. The main relations posited by the theory are outlined in Figure 8-1.

This version of the psychohistorical theory aims to represent key interactions between the behaviour of a performing cultural agent who acts as a *learner* (right-hand panel) and a *target cultural phenomenon* that can be learned, known about, or copied (left-hand panel). Following the psychohistorical method introduced in earlier chapters (in the narrow sense of "psychohistorical"), I formulate psychohistorical heuristics and hypotheses on the basis of a reflective analysis of the relations between (i) an ontological model of a target phenomenon and (ii) psychological or epistemological considerations regarding the tracking and control of that phenomenon. The ontological model is presented in the next section. Sections 8.5 and 8.6 outline a psychological model and discuss some of its epistemological implications. Then, in section 8.7 and the next chapters, I discuss older and new psychohistorical hypotheses about some of the contribution of cultural learning in person identification and control.

Instead of stipulating a definition of cultural learning *a priori*, I use the concept of cultural learning as a placeholder concept that stands for any form of learning that results in the tracking of a cultural phenomenon φ. On this account, *cultural learning* occurs when the learner's behaviour or mental states become *sensitive to*, or *re-enact* a cultural phenomenon φ (centre of Figure 8-1). That is, cultural learning takes place when the learner acquires (or perfects) a competency in tracking or copying sociocultural information carried by behaviours or artefacts.[103] For example, cultural learning in that sense occurs when the learner imitates or discovers new social skills and artistic artefacts.

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[103] The concept of cultural learning that I just defined differs from more restrictive notions that treat cultural learning as a subcategory of *social learning*, necessarily distinct from *individual learning* (Bentley, Earls, & O'Brien, 2011; Tomasello, 1999; Tomasello et al., 1993). In particular, Tomasello and colleagues have defended models that identify the critical condition for cultural learning in the propensity to engage in perspective-taking and *shared intentionality* (Tomasello, 1999; Tomasello et al., 2005). As noted by Tomasello (1999: p. 51-52) himself, however, this definition of cultural learning is more restrictive than the specifications adopted by most other theories. In the present research, I have adopted a broader conception of cultural learning because – as I argue below – some types of implicit
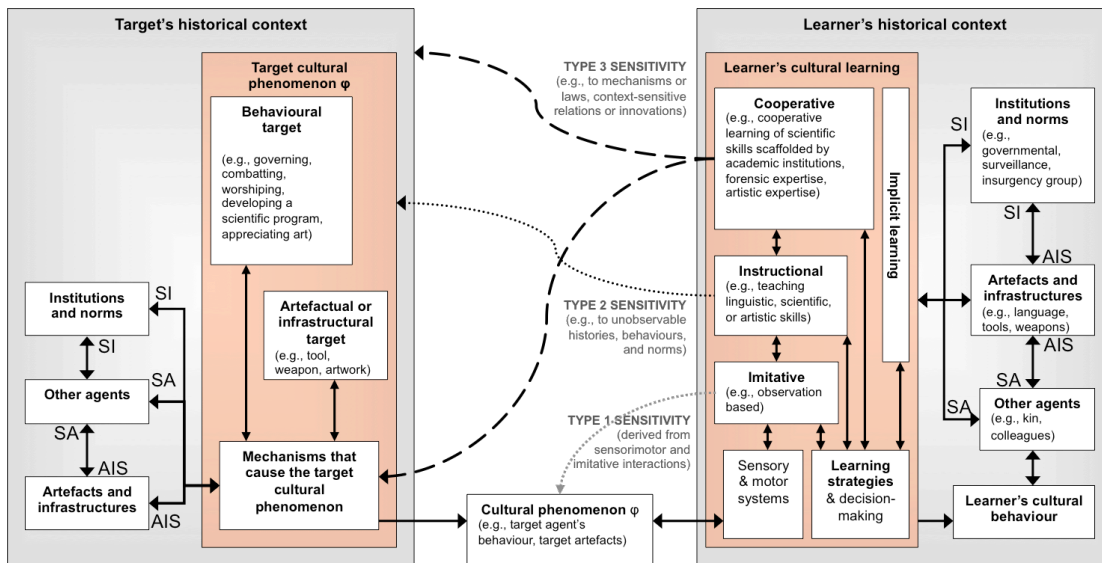
Figure 8-1 A psychohistorical theory of cultural learning.
The left-hand panel denotes phenomena that can be taken as a target for learning by a human learner. The right-hand panel denotes the mechanisms involved in cultural learning. SA, scaffolding for agents; SI, scaffolding for institutions; AIS, artefact and infrastructural scaffolding. Bold arrows indicate putative causal interactions. Dashed arrows refer to different types of sensitivity to (or tracking of) cultural phenomena. See text for details.

8.4   The historical ontology of cultural phenomena

To appreciate the explanatory virtues of a psychohistorical approach to cultural learning, it is necessary to acknowledge the *historical* and *contingent* characteristics of cultural phenomena. Some dual inheritance theories have acknowledged key aspects of the historicality of cultural phenomena (e.g., social inheritance, scaffolding structures). However, some these theories have not engaged with the discussion of other critically historical aspects (e.g., uniqueness

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learning seem to count as genuine forms of cultural learning (albeit minimal), and narrow definitions of cultural learning tend to obviate the discussion of implicit cultural learning.

and contingency). Acknowledging the historicality of cultural phenomena might have been hindered by disagreements on the theoretical characterisation of culture.[104]

The historicality of social inheritance

The historical structure most often described by the dual inheritance models proposed by Tomasello, Sterelny, and their collaborators is the structure of social inheritance. According to the canonical description, a cultural phenomenon is historical in the sense that it is a part of a chain of *social transmission* (or inheritance) in which each particular cultural exemplar (e.g., a pattern of behaviour or an artefact) has both ancestors and the potential for descendants. Several investigators[105] have studied the mechanisms underlying cultural transmission and attempted to explain how these mechanisms entail cumulative cultural change.

Cumulative cultural change (Heyes, 2012a), also known as the "ratchet effect" (Tomasello, 1999: p. 37-40),[106] is a process in which a cluster of cultural information, innovation, or practice is communicated and modified from individual to individual, via social learning mechanisms such as imitation and teaching. This body of culturally transmitted information gradually and progressively expands over evolutionary time by means of accumulation, aggregation, and incorporation of adaptive innovations and beneficial modifications (McElreath & Henrich, 2007). Tomasello (1999) links cumulative cultural

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[104] Although most models predict that cultural phenomena are such historical things as linguistic or religious practices and human artefacts, there are still plenty of scholarly disagreements on the ontological characterisation of culture (Risjord, 2012) and of the mechanisms of cultural change (Godfrey-Smith, 2012). For example, while some models specify culture primarily as transmission of *information* (Richerson & Boyd, 2005: p. 5, 61; Sperber & Hirschfeld, 2004) or *representations* (Atran & Medin, 2008) capable of affecting individuals' socially acquired behaviour, other models specify culture as a set of *practices* (Bourdieu, 1972/1977; Ortner, 2006; Schatzki, Knorr Cetina, & von Savigny, 2001) or *activities* (Meyer, 1987).

[105] For relevant works, see Richerson and colleagues (Richerson & Boyd, 2005; Richerson & Christiansen, 2013), Sterelny (2003), Mesoudi (2011), Godfrey-Smith (2012).

[106] For other studies on the ratchet effect, see Tomasello (1999), Tomasello et al. (1993), Tennie et al. (2009).

change with the fact that human traditions have "cultural 'histories' " (Tomasello, 1999: p. 40).

The horizontal arrows linking the two panels of Figure 8-1 aim to represent a section of this cumulative process, which in case is "zoomed in" at the scale of the actions of an individual learner.

The historicality of social scaffolds

The causal and historical characteristics of a cultural phenomenon also depend on context-specific structures that are sometimes described as *scaffolds* (Sutton, 2010; Tomasello, 1999; Wimsatt, 2014; Wood et al., 1976). Wimsatt (2014) has provided a helpful account of the role scaffolds in human cultural transmission. On Wimsatt's account, *scaffolding* refers to

> the structure-like dynamical interactions with performing individuals that are
> means through which other structures or competencies are constructed or acquired
> by individuals and organizations. (Wimsatt, 2014: p. 81)

Wimsatt's account provides useful contextualistic heuristics because it takes into account the specificity of human post-industrial cultures, acknowledging the fundamental role that technical, infrastructural, and legal scaffolds play in the cultural transmission that are distinctive of modern post-industrial societies.

Following Wimsatt (2014), and as illustrated in Figure 8-1, I distinguish between *scaffolding for individual agents* (SA) exerted, for example, by family structures, schools, work organizations and professional societies; *scaffolding for institutions* (SI), as is provided by corporate law and distribution networks that support market and governmental institutions; and *artefact and infrastructural scaffolding* (AIS), which unfolds either through language or via networks of artefacts supporting sociocultural interactions (e.g., public transport, telephone directories, shopping centres, or the Internet).

Causal uniqueness and contingency

Following Tomasello, Sterelny, and Wimsatt, and their colleagues, I have acknowledged that cumulative cultural change and scaffolding processes are central to the historicality of

cultural phenomena. In addition to these factors, I argue that one additional important – albeit neglected – set of ontic characteristic of cultural phenomena comprises the causal uniqueness and contingency of cultural events, behaviours, and artefacts. By this, I mean that, like particularly instantiated individuals of a person kind (chapter 6), particularly instantiated cultural phenomena are the product of a *unique causal history*. If one accepts an ontology that acknowledges that this uniqueness obtains in our world, this fact has important implications for the psychology and epistemology of cultural learning. How can this causal uniqueness be analysed?

If one views a situated cultural phenomenon as a unique social event or object (e.g., a unique cultural event, performance, or artefact), this suggests that that a cultural event (or object) occurs only once in space-time. Its existence depends on a unique series of unrepeatable causal events within a unique historical context (Bullot & Reber, 2013a; Chatterjee & Vartanian, 2014; Csibra & Gergely, 2009), which can be affected by historical contingency (Smith, 2007).

Like an *original* artefact, a cultural *event* such as an agent's socially transmitted action is historically unique: it occurs only once in history. For example, Colonel Paul Tibbets learned the skills to fly a Boeing B-29 Superfortress bomber through repetition and social transmission; however, his action of flying the B-29 codenamed *Enola Gay* for completing the atomic bombing of Hiroshima is an event that is unique: it occurred only once (on 6 August 1945).

Similarly, the event of a ritual or an artistic performance occurs only once. For example, the premiere performance by Diaghilev's Ballets Russes of the *The Rite of Spring* composed by Stravinsky occurred only once (on 29 May 1913).

The historical uniqueness of certain cultural phenomena is often acknowledged and described by research guided by contextualistic heuristics (chapter 4).[107] The latter provide

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[107] See, for example, Weber (1904-1905/1930, 1956/1978) and Lyon (1994).

contextualised "thick" or "idiographic" description of cultural phenomena, and are often suggestive of the contingency of such phenomena.

In contrast to contextualistic research, theories that rely on mechanistic and adaptationist heuristics tend to screen out the description of the uniqueness and contingency of token cultural phenomena. I would conjecture that at least three different factors have determined this state of affairs.

First, some works are guided by adaptationist heuristics that favour "macro" levels and statistical types of analysis over "micro" scales; and micro levels of analysis seem more adequate to discuss the uniqueness of token cultural phenomena.

Second, many theories of cultural evolution emphasise the hypothesis that socially transmitted behaviours, skills, and innovations tend to fit the environment of their performers and users (thus, enhancing their survival and reproductive success). The emphasis on fitness and adaptation is likely to lead adaptationists to screen out the consideration of randomness and contingency in the causal histories of cultural behaviours. Research on artistic behaviours provides interesting examples in that respect. As several evolutionary psychologists have noted (Pinker, 1997, 2002; Tooby & Cosmides, 2001), artistic practices are notoriously difficult to explain in terms of fitness to an environment because many artistic practices are easily described as maladaptive or produced by random process that do not seem to impact fitness. Although a number of scholars have tried to provide theories of art as an adaptation, these theories are faced with difficult challenges and objections (Davies, 2012; Godfrey-Smith, 2013). In that particular field, it is likely that the emphasis on artistic cultures as adaptations and fitness enhancing has led to a neglect of the discussion of uniqueness and contingency in artistic cultures.

The historical uniqueness has also been taken into consideration by experimental research. For example, George Newman and Paul Bloom (2012) have demonstrated that human agents' valuation of certain cultural artefacts – such as works of art – is typically sensitive to these artefacts' distinctive causal histories. Although mechanistic theories of cultural learning adopting reductionistic and universalistic heuristics do not aim to describe

historically unique characteristics of cultural phenomena (e.g., Chatterjee & Vartanian, 2014), I argue below that they can nonetheless contribute to explaining the context-specificity and historical diversity of cultural phenomena.

Historical ontology

Borrowing a expression coined by Ian Hacking (1986, 1995b, 2002), I will refer to an ontology that analyses the historicality of a set of cultural practices and scaffolds a *historical ontology* (Bullot, 2015; Sugarman, 2009). The aim of the historical ontology of a phenomenon φ is to explicate that φ is necessarily a historical phenomenon, under some interpretations of the property of historicality – for example, the properties unfolding in time, having an inheritance structure, and resulting from a history of practices.

The historical ontology of a cultural phenomenon can be either explicitly discussed in a model (Atran & Medin, 2008; Bullot, 2015; Hacking, 2002; Tomasello, 1999) or left as an unanalysed assumption (Bentley et al., 2011; Godfrey-Smith, 2012; Ross, Greenhill, & Atkinson, 2013; Sperber & Hirschfeld, 2004; Wimsatt, 2014). I have argued that a token phenomenon φ qualifies as a cultural only if φ satisfies a set of historical conditions that includes social inheritance, scaffolding relations, and causal uniqueness. I will now turn to the examination of the consequences of these characteristics for a theory aimed at integrating mechanistic and contextualistic accounts of cultural learning.

8.5   Cultural learning mechanisms in context

To justify the integration of mechanistic and contextualistic heuristics in the science of cultural learning, it needs to be shown that knowledge of the *mechanisms[108] of cultural learning* contribute to explaining the *unique histories* and context-specificity of cultural

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[108] The concept of *mechanism* I adopt follows the terminology employed in the epistemology of mechanistic explanation (Bullot & Reber, 2013b; Craver & Bechtel, 2006; Hedström & Swedberg, 1998) and inter-level reduction (Wimsatt, 2006). In that framework, a *mechanistic explanation* is an explanation that accounts for an *explanandum* phenomenon by analysing – context-specific – components and activities of a system (Craver & Bechtel, 2006).

phenomena described by contextualistic theories and historical ontologies. Taking up this task, my aim in the next sections will be to argue that knowledge about cultural learning derived from mechanistic heuristics[109] can account for the historicality of social inheritance, the diversity of social scaffolds, and the causal uniqueness and contingency of cultural practices.

An argument from the historical contextualisation of mechanistic heuristics

The chief ideas of my proposal can be outlined in an argument from the historical contextualisation of mechanistic heuristics. Expressed in a compact form, the argument depends on the two premises that follow:

1. In the sciences of cultural learning, mechanistic heuristics provide knowledge of the mechanisms that learners use to track and copy social information and practices (e.g., the mechanisms of imitation, teaching, and cooperation).

2. Following a psychohistorical approach,[110] the *historical contextualisation of these mechanistic heuristics* can help scholars describe and explain particular *histories* of cultural practices in a manner that is sensitive to the uniqueness and context-specificity of these cultural histories (e.g., as a consequence of *context-specific cumulative* cultural change).

If these premises 1 and 2 are true, it can be inferred from these premises that the integration of mechanistic and contextualistic heuristics is a feasible and productive approach

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[109] Here, mechanistic heuristic has to be understood in contrast to explanations derived from ahistorical laws.

[110] Premise 2 refers to the psychohistorical approach, which aims at providing psychohistorical heuristics for building models that contextualise mechanistic heuristics. By asserting that contextualised mechanistic heuristics can account for the historical ontology of cultural phenomena, the conclusion implies that psychohistorical heuristics can provide good descriptions and explanations of the historicality of social inheritance, social scaffolds, and the causal uniqueness and contingency of cultural phenomena. In addition, the conclusion implies that it is incorrect to view mechanistic and contextualistic heuristics as antagonistic methods (the claims of that sort reviewed in chapters 4 and 5 should therefore be disputed).

for the science of cultural learning. Because contextualised mechanistic heuristics offer hypotheses to explain the genesis and disappearance of *histories* of cultural practices that are *causally unique* (premise 2), contextualised mechanistic heuristics contribute to our understanding of the historicality of cultural practices.

To unpack this argument and provide evidence in support of its premises, I will examine biological and psychological research on cultural learning mechanisms (see the right-hand panel of Figure 8-1). In particular, I will discuss the explanatory virtues of explanations derived from the historical contextualisation of the mechanistic study of such mechanisms.

Causing unique cultural histories by means of imitation and teaching mechanisms

Mental and social mechanisms enabling *imitative learning* are involved in cultural learning and cumulative transmission. Although the diversity of approaches to imitation remains challenging (Bentley et al., 2011; Hurley & Chater, 2005), mechanistic approaches have become central to the study of a number of imitative behaviours. Specifically, researchers in the cognitive sciences (typically from the traditions guided by reductionistic and universalistic heuristics) have proposed mechanistic models to explain a learner's ability to *imitate an observed action* (for reviews, see Dijksterhuis & Bargh, 2001; Gallese, Keysers, & Rizzolatti, 2004; Hurley, 2008; Hurley & Chater, 2005). Proposed physiological mechanisms include the mirror neuron system (Cook, Bird, Catmur, Press, & Heyes, 2014; Gallese et al., 2004), mechanisms for shared coding between perception and action (Dijksterhuis & Bargh, 2001; Hurley, 2008), and associative learning mechanisms (Catmur, Walsh, & Heyes, 2009; Heyes, 2001; Keysers & Perrett, 2004).

Human imitators also engage in imitative behaviours that require more than copying a single observed action to replicate or conform to social phenomena. For example, there is evidence that humans adopt *conformist strategies or biases* that minimise the cost of social learning (Bentley et al., 2011; Richerson & Boyd, 2005). There is also evidence that humans commonly engage in behaviours of *deceptive mimicry* (Gambetta, 2005), which are imitative behaviours that are aimed at deceiving another person through, for example, impersonation (Bullot, 2015) or the production of forgeries and counterfeit artefacts.

These varied imitation mechanisms partake in cultural learning (in the sense defined above) because they enable the leaner's ability to track-and-copy an observed target cultural phenomenon φ. The track-and-copy process of observation-based imitation allows social innovations to be added to the imitator's behavioural repertoire. Thus, it enables the historical role of the imitator as a cultural intentional agent contributing to cumulative cultural change (Richerson & Boyd, 2005: p. 109-111).

Following earlier proposals (Csibra & Gergely, 2009; Tomasello, 1999; Tomasello et al., 1993), and as illustrated in Figure 8-1 (right-hand panel), it is useful to distinguish basic imitative learning from instructional learning (see, however, my note below about combined learning strategies). Although *instructional learning* involves a variety of imitative behaviours, this kind of learning is distinctive in that it refers to learning undertaken under the guidance of a teacher – or model – and is associated with the learner's understanding of the difference in expertise between the learner and the teacher.

Instructional learning typically involves the teacher communicating generic knowledge to the learner by constructing appropriate learning contexts to facilitate the learner's acquisition of novel behaviours and understanding (Csibra & Gergely, 2009; Kline, in press; Lee & Anderson, 2013). As a social mechanism, instructional learning comprises not only agent functions like the functions of a learner and a teacher, but it also requires other types of scaffold that provide pedagogical supports. For example, teaching in the context of a twenty-first century Western university often requires multiple intentional agents (a lecturer helped by teaching and administrative assistants) supported by both legal and regulative scaffolds (e.g., academic codes of conduct) and infrastructural scaffolds (e.g., networks on the Internet). Instructional learning and teaching are therefore socially scaffolded (Tomasello, 1999: p. 80; Tomasello et al., 1993: p. 499; Wimsatt, 2014; Wood et al., 1976), and the scaffolds of teaching practices are continuously adapting to historical changes.

Both imitation and instruction mechanisms provide human learners' with resources to track and copy social information and practices (including innovations) over time. For example, imitative learning provides children with a means to understand and manipulate

agents or artefacts (Tomasello et al., 2005). In so doing, imitative learning enables the development of other types of cultural learning such as instructional and cooperative learning. Both imitation and instruction mechanism are therefore core social mechanisms that enable within-group transmission of innovative *context-specific* behaviours and knowledge – that is, behaviours and knowledge that are adapted to a unique local environment and a causal history distinctive of the relevant social group (Boyd et al., 2011; Pinker, 2002: p. 63-64).

The context-specific skills and contents that are taught or imitated include oral and written languages (N. Evans & Levinson, 2009), manners and moral norms (Elias, 1939/2000; Haidt & Joseph, 2004), folk theories (Atran & Medin, 2008) and narratives (Ross et al., 2013), religious doctrines (Atran, 2010; Richerson & Christiansen, 2013), artistic skills and contents (S. Brown et al., 2014; Bullot & Reber, 2013a), and scientific skills and contents (Gopnik & Meltzoff, 1997; Sawyer, 2006).

In sum, ever since the capacity for human cultural learning emerged, diverging cultural innovations were transmitted separately as a result of the way cultural learning mechanisms enable groups' differential cumulative cultural histories (Bell, Richerson, & McElreath, 2009; Boyd et al., 2011; D. Cohen, 2001; Tennie et al., 2009).

Building unique cultural histories with cooperation mechanisms

Tomasello (1999) and his colleagues (e.g., Tomasello et al., 1993), along with several other research groups, distinguish cultural learning in which a learner is guided by a model or a teacher (i.e., imitative and instructional learning) from cultural learning as it occurs cooperatively among a group without salient models or teachers. *Cooperative learning* in Tomasello and colleagues' sense refers to learning that takes place when cooperation between learners is not based on an asymmetric relation in respect to authority and expertise (Tomasello et al., 1993: p. 501); rather this kind of learning occurs when two agents work together to achieve a common goal, and, as a result of their interactions, succeed in achieving that goal. A group of researchers tends to emphasise that cooperative learning is a fundamental driver of cultural innovation in human cultures (Boyd et al., 2011; O'Brien & Shennan, 2010; Sterelny, 2012; Tennie et al., 2009; Tomasello, 2014).

The previous argument also applies to the analysis of cooperative learning. Cooperative learning creates opportunities for context-specific innovations (Tomasello, 2014) – that is, innovations that aim to resolve problems that may be needed only in the particular context in which the cooperative act occurred. This can be illustrated with examples of cooperative practices in both the identification of people with the discussion of two key examples involving person identification and artistic practices and expertise. I discuss these case studies next (and in chapter 10).

Integrating learning strategies

In the previous types of learning, a learner's behaviour is typically guided by learning strategies. A *integrative learning strategy* (see the right-hand panel in Figure 8-1) is a goal-directed behaviour in which the motivated learner(s) engage(s) in a planned action aimed at achieving a learning objective associated with imitative, instructional, and cooperative learning – or a combination of some of those different types of learning. To engage in this deliberate cultural learning, an agent needs to be aware of his lack of cultural information or ability and have the motivated intention to perform effortful actions necessary for acquiring this information or ability (Atran & Medin, 2008; Lee & Anderson, 2013; Rogoff, 2003; Schank, 1999).

A variety of strategies for cultural learning have been documented. Although some aspects of *imitation* seem to operate implicitly and 'automatically' (Dijksterhuis & Bargh, 2001; Hurley, 2008), purposeful learning strategies are involved in a variety of imitative learning (Laland, 2004; J. H. G. Williams, 2008). Similarly, the discussion of teaching strategies and motivational factors for supporting effortful learning behaviours is ubiquitous in research about instruction (Meltzoff, Kuhl, Movellan, & Sejnowski, 2009; Rogoff, 2003). The contextualisation of cultural learning mechanisms can take place in the context of the use of *strategies* that rely on the *integration of imitative, instructional, and cooperative learning*.

Consider, for example, Dennett's (1987) analysis of two core learning strategies: the intentional stance and the design stance. According to Dennett, learners use the *intentional stance* to explain the behaviour of people as intentional agents on the basis of optimality

considerations (Dennett, 1987); and learners use the *design stance* to explain the workings and functions of artefacts. According to this analysis, if a learner discovers an artefact *A* – say, a *weapon of type A* (e.g., an improvised explosive device) – and wishes to build another artefact, *B*, that copies the functions performed by *A* (e.g., to attack, combat, kill), the learner needs to use the design stance to infer the functions performed by *A* and understand how the parts of *A* enable such functions. Thus, on Dennett's account, adopting a learning strategy like the design stance seems to be part cultural transmission and singular histories of cultural learning (e.g., histories of the copying of specific artefacts).

Dennett's account, however, has not examined the scaffolding roles played by teaching and cooperation mechanisms in the use of the design stance. Consider, for example, a context where the agent who infers the functions of the type A weapon by means of the design stance is the leader of a guerrilla group. This leader begins teaching other learners how to cooperatively use and copy weapons of the type *A*. Then, we can expect that the design stance is going to be critical to both that leader's *teaching* and the *cooperation mechanism* developed by the group for manufacturing other type *A* weapons. This example suggests that *collective adoption of the design stance* that results in unique cultural histories is likely to be scaffolded by heuristics built from the synergy of imitative, instructional, and cooperative learning. It also suggests that the collective learning and control of type A weapons will be distinctive of the historical and tactical context in which these learners operate.

Implicit learning mechanisms and contextualisation

It should also be noted that processes of implicit learning may also contribute to causing histories of cultural learning, although the differentiation of implicit learning from explicit integrative learning is tricky. The rationale for mentioning implicit learning is given by a series of findings suggesting that cultural learning may sometimes occur implicitly (Bigand & Poulin-Charronnat, 2006; Dijksterhuis & Bargh, 2001; Zajonc & Markus, 1982). Based on the evidence provided by these studies, it seems plausible that implicit mechanisms of cultural learning can contribute to the transmission of practices that are distinctive of, or unique to a group's particular history.

One may use the expression *implicit cultural learning* to refer to cultural learning triggered by mechanisms autonomous from the learner's conscious intentions or strategic plan to learn cultural abilities. Evidence for *implicit learning* has been described in varied social practices such as consumer behaviours (Zajonc & Markus, 1982) and musical abilities (Bigand & Poulin-Charronnat, 2006; Meyer, 1987).

Consider for example Robert Zajonc's hypothesis of the *mere exposure phenomenon*: mere repeated exposure to an object enhances the agent's attitude toward that object, where "mere exposure" refers to a condition making the object accessible to the agent's perception (Reber, Schwarz, & Winkielman, 2004; Zajonc, 1968). The hypothesis of the mere exposure effect predicts that a learner's mere exposure to a cultural phenomenon φ (e.g., an indigenous artefact, a fashionable dress) will improve the learner's attitude toward φ without this learner being aware of this change of attitude. Because the attitude change requires the learner's tracking of φ over repeated exposures, it seems to qualify as a type of cultural learning in the broad sense defined above.

A similar argument could be articulated to support the hypothesis that *unconscious mimicry* (Dijksterhuis & Bargh, 2001; Ferguson & Bargh, 2004) and implicit *priming of moral behaviours* by religious signs (Bloom, 2012) can function as mechanisms for implicit cultural learning.

8.6   Grades of cultural sensitivity: sketch of an epistemology of cultural learning

Once it is acknowledged that it is possible to integrate mechanistic and contextualistic heuristics into the study of cultural learning, it also becomes possible to investigate the robustness (or reliability) of specific types of cultural learning. This is the task of an epistemology of cultural learning. The psychohistorical model suggests several *epistemological* hypotheses about cultural sensitivity, understanding and knowledge (Bullot, 2015). For example, in a modern state of the twenty-first century, the capacity of experts in covert intelligence to identify radicalized militants and terrorist threats are culturally inherited skills that are far from being infallible. Thus, what are the factors that can modulate the *robustness* of these expert's identification abilities?

As I argued in my discussion of Tomasello's research programme, epistemological questions about cultural learning are left unaddressed by the dominant psychological theories of cultural learning. In contrast to this omission, the psychohistorical model can address such questions. This because the model hypothesizes that the different mechanisms of cultural learning enable different types of sensitivity to cultural phenomena, which can be more or less reliable at performing cultural tracking and control. In the schematic presented in Figure 8-1, I distinguish three distinct types of cultural sensitivity, which are represented by the unidirectional curved (dotted or dashed) arrows.

Implicit and sensory-motor (Type-1) sensitivity and control

The most basic forms of observation-based *implicit* and *imitative learning* provide the learner with an ability to track and reproduce observable characteristics of the behaviour of a target cultural agent. This *Type-1 sensitivity* is represented in Figure 8-1 by the dotted grey arrow. An infant who imitates an observed action cannot reach the kind of objective knowledge that a cooperative team of university students or scientists tend toward (Tomasello et al., 1993).

Heuristic and model-based tracking (type 2 sensitivity)

The processes of enculturation associated with *teaching* and *instructional* learning (Tishman et al. 1993; Odden and Rochat 2004) – enable the learner's ability to track and describe a wider variety of *unobservable* and *context-specific* cultural or natural phenomena, including unobservable causal histories and a variety of social norms (Tennie et al., 2009). This seems especially true with the learning derived from linguistic communication (Csibra & Gergely, 2009; Tomasello, 1999), naïve theories (Atran & Medin, 2008; Gelman, 2003; Sperber & Hirschfeld, 2004), and the social inheritance of mental models and theories (Gopnik & Meltzoff, 1997). This *Type-2 sensitivity* is represented in Figure 8-1 by the black dotted arrow.

Cooperation in tracking guided by meta-heuristic judgements and inference to the best explanation (type 3 sensitivity)

In contrast to imitative and instructional learning, however, the combined strategies of epistemic learning associated with *cooperative* learning between experts enable the most sophisticated forms of epistemic sensitivity, *Type-3 sensitivity*, including context-sensitive abductive inference (Bullot, 2015) and mechanistic explanations in scientific theories that are sensitive to mechanisms (Craver & Bechtel, 2006; Hedström & Swedberg, 1998). For example, cooperative learning in the biological and cultural sciences allows causal explanation and prediction of social or natural facts scaffolded by advanced scientific theories and technical instruments. Similarly, a cooperative study by a group of experts of an artwork can elicit forms of artistic understanding that cannot be achieved by mere basic exposure to artwork (Bullot & Reber, 2013a). This Type-3 sensitivity is illustrated by the back dashed arrow in Figure 8-1.

These differences in the learner's Type-1, -2, and -3 sensitivities can, in turn, explain why some learning processes are more reliable than others at facilitating the learner's acquisition of robust cultural skills, justified cultural knowledge, and far-reaching cultural understanding.

8.7   Cultural learning in the histories of person identification for control

The psychohistorical model of cultural learning outlined in the previous sections suggests a series of original predictions regarding person identification and control.

Imitation mechanisms for person identification and control

From the psychohistorical model just outlined, I infer that the investigation of cultural learning mechanisms can contribute helpful explanations of the diversity and persistence of specific behaviours of person identification. Because I have distinguished a plurality of cultural learning mechanisms, the contributed hypotheses vary as a function of the mechanism considered. Consider imitation mechanisms, the psychohistorical model suggests this general hypothesis:

Imitation mechanisms for person identification and control. Imitation mechanisms contribute to practices of person identification and control performed by both individual learners and groups.

Andrew Meltzoff (2002) has presented evidence that supports a developmental version of this hypothesis. In his account, infants use imitation for identification in the sense that infants use a person's action to determine who the person is (Meltzoff, 2002; p. 25-26). Meltzoff's developmental model of person identification is guided by mechanistic heuristics and theoretical individualism.

Metzoff's model is not aimed at addressing the cultural variety of imitative behaviours involved in person identification and control. For example, Metzoff's account does not investigate the mechanisms that need to be used to identify impostors (Bullot, 2014a; Gambetta, 2005), who use impersonation and other mimetic behaviours for the purpose of fraud and criminal activities (see chapters 2, 4, and 6). As I argued in chapter 4, it is unlikely that successful impersonators (e.g., Arnaud du Tilh) can be identified by means of the most basic sensory-motor mechanisms for recognition and imitation. In contrast to an account merely based on perception, the psychohistorical model suggests that integrative strategies for tracking and learning are the processes by means of which impersonators and deceivers are identified.

Cooperation and teaching mechanisms for person identification and control

Because it acknowledges the role of cooperation as a driver of cultural innovation, the psychohistorical model also suggests this prediction:

Cooperation and teaching for identification. Integrative strategies involving *cooperation* and *teaching* mechanisms support context-specific innovations into, and social inheritance of practices of person identification and control.

The previous enquiries into the techniques and social networks that scaffold person identification and control provide support for this claim (see chapters 6 and 7). As discussed in earlier chapters, humans have developed a variety of techniques and scaffolds to support learners in tasks of person identification and social control. The most notorious of the

techniques for identifying persons (i.e., persons-as-organisms; see chapters 6 and 7) range from Bertillon's "anthropometric identification" (Bertillon, 1883, 1885, 1890, 1896) and Galton's latent fingerprinting identification (Galton, 1892; Wilder & Wentworth, 1918) to contemporary methods that involve multiple forms of biometric measurements and sometimes records of DNA information.

An enquiry into the history of any of these techniques reveals patterns that support the hypothesis of cooperation and teaching for identification. For example, the introduction of Bertillon's anthropometric identification was recognised as a cultural innovation, which was the product of cooperative research leaded by Bertillon and his team. Thus, the dissemination of Bertillon's "signaletic" method for person identification would not have been possible without social mechanisms for cooperation that scaffolded Bertillon's forensic research. As for teaching mechanisms, many of Bertillon's publications on his method are in fact detailed *instruction manuals* aimed at teaching the standards of his signaletic method.

The history of the cooperation and teaching mechanisms that drive both *governmental surveillance* (Chesterman, 2011; S. A. Cole, 2001) and radical *jihadi insurgence* (Atran, 2010; Pedahzur & Perliger, 2006) provides examples from twenty-first century politics that also support the hypothesis. As in other social hostilities driven by deception, the development of conflicts between governments and insurgencies produces an arms race between (i) governmental surveillance in the name of national security and (ii) deceptive strategies developed by insurgence groups to evade surveillance and attack national interests of hostile governments. This arms race leads to feedback loops that reinforce the needs for such agents to have recourse to cooperative and innovative cultural learning.

On the one hand, strategies combining instruction and cooperation are necessary to control the propagation of *specialised expertise* into *person-identification* and *person-tracking* within and across intelligence organisations (Chesterman, 2011). Although numerous intelligence failures in predicting suicide bombings have been documented (Atran, 2010), some Western states allocate a considerable amount of resources into the development of such specialised expertise in tracking, understanding, and predicting of target jihadi events (e.g.,

radicalisation or plotting suicide missions). Skills in surveillance and forensic identification are supported by systems that scaffold the social use of innovative – albeit fallible – techniques of person identification and tracking. In addition to identification methods such as fingerprinting, which have been in use since around the end of the nineteenth century (Galton, 1892; Wilder & Wentworth, 1918), these new techniques include, biometric and DNA analysis, networked databases (Chesterman, 2011), network analysis (Pedahzur & Perliger, 2006), and various forms of data mining (Nissenbaum, 2010).

On the other hand, the skills that jihadi militants acquire to identify their enemies and evade surveillance are supported by specific cooperation and teaching mechanisms (Atran, 2010; Pedahzur & Perliger, 2006). These are networks that scaffold militants' engagement in modes of instructional and cooperative learning that are distinctive of radical jihadi cultures. As argued by Scott Atran in his research about jihadi networks (Atran, 2010, 2014; Atran & Ginges, 2012), jihad is fundamentally a *context-specific group phenomenon* (Atran, 2010: p. 219-224; 2014; Merari, Diamant, Bibi, Broshi, & Zakin, 2010: p. 97). Consequently, a predictor of an agent's willingness to commit an act of jihadi violence is the fact of belonging to an action-oriented jihadi network, which can be a loosely structured group composed of helpful family members, friends, and neighbours that provide jihadi teaching and cooperation (Atran, 2010; Pedahzur & Perliger, 2006).

The centrality of cultural learning mechanisms in jihadi cultures is not limited to the planning of suicide attacks. Cultural learning mechanisms facilitate a broad range of jihadi behaviours, which may include the skills of mind reading (Heyes & Frith, 2014) and deceptive mimicry (Gambetta, 2005) that radical militants use to pass themselves off as inoffensive civilians while carrying out a suicide mission (e.g., the shorn beards of the pilots who perpetrated the attacks of 9/11 (Atran, 2010: p. 106)) and learn other tactics that fit the context of radical jihad. Such tactics have included learning to evade the tracking of financial transactions to jihadi agents by governmental agencies (Atran, 2010: p. 207-208), learning Internet technologies to perform propaganda and recruitment missions, and learning the cooperative behaviours and feelings that enable within-group radicalisation in contexts under surveillance such as prisons. Cultural learning mechanisms are also essential to the

propagation of radical interpretations of the different historical concepts of *jihad* that leaders and militants uphold (e.g., the learning of Bin Laden and Zawahiri's 1998 fatwa calling for global 'Jihad against Crusaders and Jews' (Atran, 2010: p. 104)) and the acquisitions of normative commitments to sacred imperatives that prohibit compromise with 'infidels' (Atran & Ginges, 2012).

The cultural learning and histories of errors in person identification for control

The psychohistorical model also suggests hypotheses about errors in person-identification. Ideally, person identification behaviours should be dynamically adjusted as a function of successes and errors at tracking of and predicting the target person's causal history (chapter 6). However, when a learner inherits via cultural learning a strategy based on misleadingly simple heuristics, the tracker may fail to detect any errors occurring during the identification of a target's causal history and persistence mechanisms. Evidence suggests that, when causal-historical reasoning is driven by shallow heuristics, the latter can lead to biases, an illusion of explanatory depth (Rozenblit & Keil, 2002), and perhaps even magical thinking (Newman & Bloom, 2014).

To further understand the specific *limitations of heuristic-based tracking* (chapter 6) and justify its distinction from cooperative explanation-based tracking, it is useful to analyse, in some detail, a historical case of impersonation. Here I consider again the case of Martin Guerre (Davis, 1983; for a contemporary case, see Grann, 2008) introduced in section 2.3 – for more recent cases of impersonation, see Gambetta (2005, 2009) and Grann (2008). Martin Guerre, a French peasant from sixteenth century France, was impersonated by Arnaud du Tilh. The latter deceived numerous villagers who knew the young Guerre resided with Guerre's wife and his son for about three years. What were the cognitive and social mechanisms that deceived these villagers?

After eight years, the villagers' ability to visually recognise Martin's face might have become error-prone, which could have resulted in false-positives when they saw a similar face. On the other hand, it is also possible that the villagers may have culturally inherited mistaken identifications as a consequence of using imitation and error-prone heuristics. The

analysis of historical sources (e.g., Davis, 1983: p. 42, 79, 81, 84) suggests that the villagers – including Martin's relatives – may have reasoned on the basis of heuristics such as this:

> "If the person provides an accurate account of intimate autobiographical details of Martin Guerre's past, then this person is [probably] Martin."

The villagers' decision-making might have been influenced by socially "contagious" false beliefs (Lampinen et al., 2012; Zimbardo & Leippe, 1991) and heuristics that take as a premise a psychological trait deemed to be characteristic of Martin's identity. Witnesses at the trials might have had recourse to a misleading inference conflating a mental *type* distinctive of Martin with the *particular causal history and mechanisms* that produced Martin's agency (i.e., agency-making mechanisms in Figure 2):

> "If that person manifests attitudes such as beliefs, intentions, memories, values typical of Martin Guerre; then this person is [probably] Martin."

Although Martin's wife should be an expert at identifying Martin, we can only propose conjectures regarding whether she was genuinely deceived by Arnaud or became Arnaud's accomplice (Davis, 1983, 1988; Finlay, 1988). Other villagers might have relied on cultural learning strategies based on *imitative behaviours* and *conformist inferences* (Bentley et al., 2011; Richerson & Boyd, 2005). about social relationships and the way people's appearance changes. Such inferences provide simple heuristics and might reduce dissonance among potentially conflicting beliefs, as in:

> "If that person is recognised and accepted by Martin's wife as her husband, then this person should be Martin in spite of conflicting accounts" (a model-based bias in the classification of Richerson & Boyd, 2005: p. 69);

> "If most of our villagers identify that person as Martin, then this person should be Martin" (a *frequency-based bias*).

The former heuristic-based inductive inferences are not necessarily truth-conducive. In the case of Arnaud's impersonation of Martin, it is plausible that they have been instrumental

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in producing the concatenated errors[111] that made possible Arnaud's creation of an *apparent Martin* for "free riding" Martin's social network. Relying on people's use of heuristic-based tracking and acting in the manner of a "forger of agency", Arnaud was successful at feigning important features of Martin's agency such as Martin's autobiographical memory, decision-making, and cooperative behaviour (concepts 3C-5C in Table 1: apparent psychological agency, apparent intentional agency, and apparent cooperative agency).

In line with research on biases induced by heuristics in statistical reasoning (Tversky & Kahneman, 1974) and social heuristics (Hastie & Wittenbrink, 2006), the misleading heuristics in the identification of New-Martin illustrate how cultural learning mechanisms such as social heuristics can generate biases and errors in person identification. Relevant examples are not limited to social heuristics. For example, the "unique-feature recognition" heuristic (chapter 6) will fail to provide a single tracker's ability to individualise a target in a pair of twins or look-alikes if the criterion-feature is not uniquely inherent to the target (shared with another agent) or if it is concealed. Thus, though integrative research on identification-heuristics remains scarce (an important exception is Young et al., 1985), the frequency of person-misidentification errors caused by heuristics and imitative learning is likely to be significant and have major societal implications – e.g., errors in distributions of social punishments or benefits as in the conviction of innocents in judicial trials (Lampinen et al., 2012).

The psychohistorical model suggests a contextualist account of the detection and resolution of errors in heuristic-based agent tracking that requires the distinction between heuristic-based and explanation-based agent tracking (chapter 6). On this account, *errors* in heuristic-based agent-identification derive from the tracker's *lack of sensitivity* to the history and agency-making mechanisms that cause the target's persistence and behaviour (Figure 2). Subsequently, in order to detect and overcome an identification error derived from the use of heuristics, the tracker needs *context-sensitive* methods that can outperform heuristics for

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[111] Concatenated errors are involved into major societal failure and disasters, see Reason (1990).

retracing the actual causal history of the target and its agency-making mechanisms. Reference to these context-sensitive methods is missing in the ahistorical mechanistic models I considered. The explanation-based tracking of an agent is context-sensitive in that sense because it can provide the tracker with models and theories of the target's causal history, agency-making mechanisms, and historical context. It is only while using explanation-based tracking that the tracker opts to engage in strategies that aim to produce inferences to the best explanation, which draw inferences from the most likely or productive explanations of the target's behaviour.

Following a number of accounts of inference to the best explanation, one can conjecture that inferences to the best explanation rely on an ability to consciously perform *contrastive reasoning* (Lipton, 1991/2004). Contrastive reasoning is the ability to compare and adjudicate "facts and foils," competing explanations from a pool of potential explanations, or competing hypotheses from a pool of empirical conjectures. I am assuming that contrastive reasoning is a common feature of cooperation in forensic and scientific teams.

Heuristic-based identification is distinct from cooperation-based inferences to the best explanation because heuristics depend on the matching of a limited pool of criteria or rules rather than on insights provided by causal explanations or theories of the target's intrinsic mechanisms. In contrast to explanation-based tracking, heuristic-based tracking has the profile of a *"satisficing" method* of decision-making, in which the decision-maker defines criteria for an aspiration level and ends the search for alternatives as soon as one that exceeds the aspiration level is encountered (Gerd Gigerenzer & Todd, 1999: p. 12-14; Simon, 1990: p. 9-10). By contrast to satisficing methods, inference to the best explanation is not tied to an aspiration level. Opting for explanation-based agent tracking provides the tracker with opportunities to use contrastive reasoning or simulations to compare and adjudicate competing explanations of the target's identity and agency.

These considerations can be illustrated by the forensic discovery by the Judge Jean de Coras and his confederates that Arnaud du Tilh has impersonated Martin Guerre. The historical evidence available to us suggests that their final verdict (Arnaud's conviction)

resulted from cooperative explanation-based tracking. Their identification of Arnaud du Tilh as an impersonator must have resulted from contrastive reasoning aimed at providing the best explanation of the discrepant testimonies and heuristic-based narratives about Arnaud and Martin's histories. Across the variety of contexts for tracking and reasoning based on contrasting different explanations, there is evidence that Coras and his confederates used interventions and trickery to *contrastively* assess the epistemic value of the numerous testimonies (e.g., Davis, 1983: p. 77-78). For example, Coras manipulated the defendant's and witnesses' emotional responses to testimonies by means of confrontations of their conflicting accounts in the context of separate hearings (Davis, 1983: p. 84), theatrical manipulations, and line-ups. The comprehensive explanation of Arnaud's and Martin's historical identities by all the parties was not the outcome of either tracking based on recognition alone or tracking based on heuristics alone. Rather, it was the outcome of a long and partially cooperative explanatory process aimed at retracing the causal histories of both Arnaud and Martin on the basis of a collective of trackers partially sensitive to the social mechanisms involved in the case and their historical context.

At the beginning of the twenty-first century, contemporary learners and manipulators have access to a variety of scientific theories of person-making mechanisms along with techniques derived from such theories. Had Coras's enquiry benefited from relevant scientific explanations of the biological mechanisms that differentiate Arnaud and Martin's organisms and link them to different causal genealogies, this forensic enquiry would have been greatly facilitated. For example, theories of inheritance mechanisms and DNA fingerprinting techniques (e.g., Pena & Chakraborty, 1994) could have provided the forensic enquirers with means to assess the likelihood of the hypothesis that Arnaud du Tilh (Martin's impersonator) is the father of Martin's son. DNA fingerprinting would provide highly likely explanations that the impersonator is not the father's of Martin's son, and such biological assessment could have been combined with available sources of psychological and social evidence to undermine the impersonator's claim, and precipitate the discovery of the imposture. This example illustrates that knowledge about agency-making mechanisms can dramatically improve the robustness and predictive force of tracking and identification. It therefore

demonstrates that actual processes of person identification are scaffolded by sociocultural factors and methods specific to particular historical contexts acquired via cultural learning.

8.8   Recapitulation

In an exploration the benefits of a psychohistorical approach to cultural learning, I have argued that the antagonism between mechanistic and contextualistic approaches to the study of cultural learning is unwarranted. Research on the mechanisms of cultural learning can help us to account for the historical diversity of cultural phenomena and cultural learning. To provide a conceptual foundation for this position, I have proposed the psychohistorical model of cultural learning, and illustrated how this integrative model can be employed to explain significant phenomena at the core of social cognition and person identification.

In contrast to ahistorical theories of learning, the psychohistorical model of cultural learning suggest the development of heuristics that integrate both (i) sociocultural factors that are unique to particular historical contexts and (ii) mental and social mechanisms that have been hypothesised as psychological universals. To introduce the theory, I have focused my analysis on two subordinate tasks. First, by drawing from contextualistic account of cultural scaffolds (Bullot & Reber, 2013b; Newman & Bloom, 2012; Sterelny, 2012; Wimsatt, 2014), I have explained why cultural learning and sociocultural phenomena are linked to cumulative cultural transmission and historical contingency. Specifically, I have argued that learnable cultural contents and skills can only be adequately described by a historical ontology. Second, I have proposed a set of new psychohistorical heuristics and hypotheses for the theory of cultural learning. These heuristics and hypotheses take into account both research about the core mechanisms of cultural learning and the need to describe and explain cultural diversity and context-sensitive learning behaviours.

9 A Psychohistorical Explanation of Violent Control: The Case of Honour Related Violence

In this chapter, I show the productivity of psychohistorical framework in the investigation of controlling behaviours and violence related to honour. Some forms of honour-related violence, such as so-called "honour killings," raises an ostensibly unfathomable problem for philosophical psychology and ethics. How can someone massacre in cold blood a loved one for honour? As an attempt to shed some light on this puzzle, I assess predictions made by individualistic and nativist models of moral and empathic behaviour. A feature of these individualistic accounts is problematic when one attempts to deploy these models in order to explain honour-related violence: typically, individualsitic models have not examined the roles of cultural learning and cultural norms specific to particular historical contexts. This is problematic because there is evidence suggesting that honour-related violence is culturally inherited. In contrast to individualistic models, I will propose in this chapter a psychohistorical model of empathy modulation that formulates novel heuristics for explaining empathy modulation in honour-related violence.

9.1 The puzzle of decision-making in honour-related violence

How can one stalk, control, and massacre in cold blood one's loved one for honour? This is the apparently unfathomable problem that researchers face when considering a variety of honour-related violence such as the so-called "honour killings." Let me consider two cases.

Fadime moved to Sweden with her family when she was seven years old (Kurkiala, 2003). Fadime was of Kurdish descent and was raised in the westernised context of Sweden. While undertaking a university degree, she met a Swedish man with whom she fell in love. Fadime was aware that having sexual relations with a person neither chosen nor approved by her father was considered an act potentially worthy of death. Fadime's brother brutally

attacked her upon hearing of her relationship with the Swedish man, which led Fadime to approach the Swedish media, hoping that the media exposure might help her protect her life. Subsequently, she avoided her family home for fear of another violent reprise. Two years later, she received news that she would be moving to Kenya temporarily for a research trip. She decided to visit her sister's apartment to farewell her mother and sisters. Fadime's father learned of this meeting and staked out the apartment. When Fadime opened the door to the apartment, her father shot and killed her in front of her mother and sisters.

Farzana, a pregnant woman from Pakistan, engaged in marriage to her cousin under an arranged institution, chose to defy this convention by marrying the person of her choice (Withnall, 2014). A number of her male relatives, suspicious of her activities, were tracking these unorthodox actions and on a day of late May 2014, they stalked and ambushed her. Up to twenty of her male relatives, including her father, brother and rejected fiancé, proceeded to bludgeon her with stones in broad daylight and in full view of passersby. The men's actions ultimately caused her and her unborn child's death. According to the male perpetrators, Farzana's defiance in rejecting an arranged marriage was unquestionably worthy of this violent public murder. Farzana's father, who was arrested soon after the incident, showed no remorse and justified his behaviour with the claim that she had "insulted" her family.

The puzzle raised by these violent behaviours concerns the relations between empathy toward a family member and moral decision-making. It is likely that the victims' family members – and, within these families, the direct perpetrators of the killings – routinely identified and interacted with their female relatives with benevolent attitudes and empathic feelings. However, on those momentous days of honour-related violence, they tracked the victim as a family member worthy of ruthless punishment and coercively denied the victims' autonomy, thereby violating the moral obligation of the respect for a person's autonomy.[112] What are the mechanisms that can generate the perpetrator's shift from protective actions

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[112] For recent discussion of principle of respect of a person's autonomy in ethics and politics, see, for example, Mackenzie (2000), O'Neill (2002), and Christman (2009).

directed at a person with whom they had both emotional ties and guardianship responsibilities to radical violence and murder?

In the next sections, I assess different types of heuristics that might help us address these difficult questions. Because behaviours of radical violence have been studied in many fields of the biological and social sciences, very different types of explanatory strategies have been proposed. In this chapter, using the model of cultural learning presented in chapter 8, I will focus my discussion on the relations between contextualistic heuristics and mechanistic strategies in the explanation of violence and honour-related violence.

In the social sciences, many accounts of honour-related killings and group violence are *contextualistic and cultural*: these explanations suggest that ethnic killings are the contingent product of unique circumstances in the history of the perpetrator and the victim. Thus, such descriptions do not appeal to general mental and social mechanisms assumed to be universal to all human individuals. In contrast, a wide range of psychological and neuroscientific explanations are primarily guided by *mechanistic heuristics*, which search for *individualistic* explanations[113] that appeal to universal traits or adaptation of the human mind. In the context of honour-related violence, individualistic explanations have posited that controlling and violent behaviours are caused by psychological mechanisms that can be described by research programmes conforming to theoretical individualism.

Although the difference between contextualistic and mechanistic explanations is sometimes perceived as an antagonism, following the psychohistorical strategy described in previous chapters, I propose that these types of explanation are in fact complementary. To justify this integrative approach, I examine a model of empathy erosion in violent behaviours proposed by Simon Baron-Cohen (2011), whose mechanistic heuristics are associated with a number of individualistic and universalistic hypotheses. After discussing the limitations of this model to explain honour-related violence, I argue that the model can be combined with

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[113] Individualistic explanations in psychology focus on explaining mental states that are construed without reference to anything beyond the boundaries of the individual who has those states (see chapter 3).

psychohistorical hypotheses to account for the role of cultural learning in honour related killings.

9.2   Empathy erosion and honour-related violence

Baron-Cohen (2011) has proposed a model of the brain and mental mechanisms that elicit radical acts of violence and cruelty directed at others. According to the core hypothesis of this model, acts of radical violence toward others are enabled by a loss of empathy, a phenomenon Baron-Cohen proposes to term *empathy erosion*. Let me first present the core principles of the model and then attempt to expand these principles to explain honour-related violence.

Baron-Cohen (2011) defines empathy as "our ability to identify what someone else is thinking or feeling and to respond to their thoughts and feelings with an appropriate reaction" (2011: p. 16). In Baron-Cohen's account, all humans fit onto an empathy bell curve ranging from zero to six (zero = no empathy, six = super empathy). The Empathy Quotient (EQ) questionnaire is designed to measure two aspects of empathy: the recognition of another's feelings and the ability to react to those feelings with a fitting response. The resulting measure determines where the participant fits on the bell curve. Most people fit within the range from two to four, whereas those who show no empathy centre on zero, defined as "zero degrees of empathy." People in this range are described as having no awareness of the perceptions of others, of interactions with others, or how to anticipate others' feelings and reactions. There are two types of zero degrees of empathy, negative and positive. Baron-Cohen (2011) proposes that those with 'zero-negative' degrees of empathy suffer from deficits in socio-emotional tasks, and are often diagnosed with psychopathy (type P), narcissism (type N), or borderline personality disorder (type B).

Baron-Cohen describes those with type P, N, or B as having a permanent loss of empathy, whereas other sub-types of zero-negative degrees of empathy exist in cases of temporary losses of empathy. Temporary losses of empathy might occur, with alcohol, fatigue or depression as well as circumstantial events such as 'heat of passion' crimes or murder in self-defence. This fleeting loss of empathy explains why ordinary people can commit acts of evil

and is described as under-activity in the neural empathy circuit occurring at the time of performing the act.

An individualistic empathy-erosion model of "honour killing"

If I adopt the principles of Baron-Cohen's (2011) theory of empathy erosion to build an explanation of honour-related violence like "honour killings," we obtain an extended model that makes several novel predictions. I will call this expanded model the *empathy-erosion model of honour-related violence*. I keep this model distinct from Baron-Cohen's original model because Baron-Cohen has not discussed the specifics of honour-related violence or "honour killings" in the book where he introduces his model.

The expanded model suggests that:

> *H1, violence enabled by a lack of empathy*. Acts of radical cruelty or violence perpetrated in 'honour killings' and other forms of honour-related violence are evidence of a lack of empathy of the perpetrator(s) for the victim.

According to Baron-Cohen's psychological approach, perpetrators of honour killings fall under two categories:

> *H2, violence enabled by low EQ*. Perpetrators of honour-related violence suffer either from a long-lasting and deeply entrenched low empathy quotient (EQ) or from a temporary lapse of empathy during the planning and execution of the act of violence (e.g., the act of killing a relative).

Baron-Cohen's approach also makes a prediction about long-term sufferers of a lack of empathy:

> *H3, the three types of low-EQ personality*. Those with a long-lasting and deeply entrenched lack of empathy who perform acts of honour-related violence typically belong to one of these three categories: psychopaths, narcissists, and those with borderline personality disorder (see above).

H3 suggests that the function of the perpetrator's brain and mental mechanisms would be impaired in the manner predicted by these categories. In particular, Baron-Cohen's theory

predicts that empathy erosion is linked with impairments in *mindreading* (p. 42-43). Thus, the psychological approach suggests this additional prediction:

> *H4, mindreading impairment*. A number of perpetrators' abilities to keep track of the victim with accuracy (or reliability) in *mindreading* (thus, as an agent) is impaired – and what other researchers term *interpersonal sensitivity*[114] and the *psychological tracking*[115] of a person.

A more compact way to express the idea associated with hypothesis H4 is thus:

> *H5, personal objectification*. At least in the course of performing honour-related violence, a perpetrator tracks and responds to the victim as if the victim was *an object without sentience*, rather than *an agent with sentience and sophisticated mental states*.

The five hypotheses above provide heuristics in order to formulate plausible solutions to the puzzle of "honour killings." Specifically, the expanded model suggests that perpetrators of honour-related violence are temporary or stable sufferers of a lack of empathy. However, at least five objections demonstrate that this expanded empathy erosion model is deficient.

First, empirical research is needed to directly assess the EQ of perpetrators, and thus assess hypotheses H1, H2, and H3. Contradicting H2 and H3, some researchers have made the dissenting suggestion that perpetrators of honour killings are psychologically stable. For example, Belfrage and colleagues (2012) note that "when dealing with honour based criminality, the planning and execution often involves multiple family members, usually without personality disorders or major mental disorders" (2012: p. 22). To my knowledge, there is no direct empirical evidence to ascertain whether or not the brain mechanisms and behaviours of perpetrators of honour killings satisfy the predictions made by H2 and H3. Thus, without this evidence, we do not know whether perpetrators of honour-related violence fall within the "negative zero degrees of empathy" range, either consistently or intermittently.

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[114] For research work on interpersonal sensitivity, see, for example, Hall and Bernieri (2001) and Bombari and colleagues (2013).

[115] See Bullot (2014a).

Second, individualistic explanations of radicalised violence and cruelty by *appeal to personality traits*, as in hypothesis H3, have faced objections from a number of social scientists. The basic objection is that these explanations derived from psychological individualism are biased because they omit or underestimate the causal role played by sociocultural mechanisms and historical factors. For example, this type of objection has been deployed in recent debates about suicide terrorism. One position in that debate consists in arguing that suicide bombers are psychologically unstable, already showing suicidal tendencies (Lankford, 2014). The competing view purports that suicide bombers lack diagnosable psychological anomalies, and are merely encouraged or incentivised to commit acts of violence (Atran, 2010, 2014; Atran, Sheikh, & Gomez, 2014). This view is reminiscent of the famous thesis that most perpetrators of genocides are seemingly ordinary people, simply obeying orders – the thesis of the *banality of evil*, associated with the work of Hannah Arendt (1963) and Stanley Milgram (1974/2004), and expanded in numerous accounts of the causes of genocides (Browning, 1992/2001; Hinton, 2004).

If ordinary people are capable of undertaking acts of radical violence if compelled by violence-eliciting norms and contexts, then perpetrators of honour killings might simply be obeying cultural norms. Moreover, a cultural relativist might even argue that some perpetrators of honour-related violence might adopt cultural norms in which honour-related violence are constitutive of forms of empathy that are unique to the belief system of their subculture (see, below, the section on the perpetrator who "helped [his sister] to commit suicide"). Because the empathy erosion model of honour killing omits the discussion of obedience and cultural norms, the model does not have resources to address these objections.

Third, the empathy erosion model does not account for the fact that, in the cases of "honour killings" I reviewed, often multiple persons – usually male, but occasionally female relatives – *cooperatively* plan and enact the tracking and control of their target. Perpetrators perform *collective actions* aimed at tracking, controlling, and attacking the victim, and these cooperative actions are instrumental to the causal manipulations that they impart on the victim's behaviour and organism. I reviewed a number of cases in which the decision to undertake an honour killing is decided at a family council meeting consisting of relatives of

the targeted victim (Idriss & Abbas, 2011; Kulczycki & Windle, 2011). Decisions pertaining to which family member(s) will perpetrate the crime as well as the punishment type are decided at this meeting. In addition to "honour killing" cases, acts of cooperation are well documented in a variety of forms of collective violence, and most particularly in the literature about genocides (Goldhagen, 1996; Hinton, 1998, 2004).

The empathy-erosion model does not explain these acts of cooperation because the model adopts a type of explanation that connects with theoretical individualism, which prioritises explanations based on the stable psychological and personality traits of an individual (Fodor, 1980; Wilson, 2004). This point also raises an objection regarding the hypothesis of violence enabled by transitory low EQ (the second part of H2). If perpetrators spend from weeks to months stalking the victim and deliberating their attack(s), this process is hardly suggestive of a fleeting loss of empathy, as predicted by H2. The long-term integrative tracking and planning rather suggests an extended reduction of empathy. Additionally, because several perpetrators might have different personality profiles, it also seems unlikely that all perpetrating relatives fit neatly into the personality trait types proposed by Baron-Cohen (2011). Conformity among perpetrators' actions and feelings might be determined by other factors, such as shared cultural or sacred values instead of shared personality profile (see section 3).

Fourth, an objection from mindreading can challenge the hypotheses positing an impairment of the perpetrator's ability to keep track and understand the mental states and agency of the victim (i.e., H4 and H5). In at least some cases, the perpetrators of honour-related violence are able to track important aspects of the agency and cultural values of the victim. This is because some perpetrators tend to refer to the victim as an assertive agent who upholds iconoclastic values or blasphemy, demonstrating therefore a form of enculturated mindreading (Heyes & Frith, 2014). We therefore need to account for the fact that some perpetrators can be sensitive to, and perhaps even 'hypersensitive' to the cultural agency of the victim. This point seems to falsify the hypothesis that the perpetrator is tracking and identifying the victim as an object deprived of agency or sentience (i.e., H5).

In some acts of honour-related violence, perpetrators and victims disagree about fundamental values. For example, some 'honour killings' are typically interpreted as an outcome of colliding cultural norms (Wikan & Paterson, 2008). According to the psychohistorical approach defended below, this point can be expressed by an account of differences in histories of cultural inheritance. Both the perpetrator and the victim are cultural agents, and their actions are the outcomes of two different histories of cultural learning. If these descriptions are accurate, we need to account for the fact that the perpetrator is sensitive to the cultural values and norms upheld by the victim, and reciprocally for the fact that the victim may be sensitive or aware of the perpetrator's norms. These issues point to the need to identify the mechanisms that determine the types of sensitivity to cultural norms that the perpetrator and the victim develop. Sensitivity to cultural norms is another type of contextual sensitivity omitted by the empathy-erosion model.

Fifth, the empathy erosion model seeks to explain behaviours that are based on moral decision-making. However the model does not address the nature of moral decision-making in the context of empathy erosion. A number of other individualist accounts have offered nativist and adaptationist programmes of research[116] to explain moral decision-making and the evolution of human conflicts and conflict resolution (Hauser, 2006; Mikhail, 2007). However, these individualistic account face similar difficulties. Consider the model proposed by Mikhail.

The theory of universal moral grammar proposed by Mikhail (2007) posits that a complex set of innate and hard-wired mental processes guide or bias moral reasoning in humans.

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[116] One nativist account proposes that violence against spouses is akin to female mate-guarding in males (Goldstein, 2002). However, this account does not explain why relatives other than spouses perpetrate honour-related violence. A second nativist account uses kin-selection theory to suggest that violence among family members is reduced through natural selection (Krebs, 2008). This is based on the idea that kin are altruistic toward each other so that their shared genes proliferate. However, "honour killings" are perpetrated by and within kin with shared genes, therefore, kin selection does not explain honour related violence among family members.

According to Mikhail, "[t]he argument for moral grammar holds that the properties of moral judgment imply that the mind contains a moral grammar: a complex and possibly domain-specific set of rules, concepts and principles that generates and relates mental representations of various types" (2007: p. 144). Thus, the theory of moral grammar predicts that hard-wired rules either control or bias moral judgements. The theory takes murder as a key behaviour that is prohibited by universal moral grammar. If murdering a family member is impermissible on one day, it must follow that it is impermissible everyday. For example, Mikhail (2007) states that "prohibitions of murder, rape and other types of aggression appear to be universal or nearly so" (p. 143). This conceptual framework is challenged by the phenomena of honour-related violence because, in acts of "honour killings," the prohibition of murder is contravened. Perpetrators of "honour killings" abide by the moral prohibition of murder, if and only if, a female family member does not engage in behaviours assessed as "dishonourable." If moral judgements are stable and systematic, as universal moral grammar theory holds, how should we account for this shift in moral grammar that allows for the murder of a female relative? The model does not offer an answer to this question. Moreover, there is a broader concern about the basic concepts used in the theory. Nativist models of moral decision-making tend to adopt hypotheses about the innateness and domain-specificity of moral cognition that have proved controversial (Downes, 2013; Sterelny, 2003, 2014b).

In sum, the individualistic and nativist model of acts of radical violence, such as honour-related violence, omit the discussion of sociocultural mechanisms in the explanation of these acts of violence. This omission is problematic, and the psychohistorical framework provides an alternative account. By integrating mechanistic and contextualistic heuristics, the psychohistorical model of cultural learning I proposed in chapter 8 provides a way to integrate the discussion of the social inheritance of cultural norms with the discussion of psychological phenomena like empathy erosion.

9.3   Explaining acts of radical violence with the psychohistorical framework

As illustrated in the case of the empathy erosion model, a limitation of individualistic models is that they omit accounts of cultural teachings and social norms that can modulate, or

control empathy and acts of radical violence. For example, although Baron-Cohen (2011) acknowledges that some contextual circumstances can provoke temporary losses of empathy, he does not examine the context-specific and cultural mechanisms that can trigger such contextual losses of empathy. Furthermore, nativist models do not address the interactions between emotions and reasoning in moral decision-making regarding empathy erosion. In this section, I propose a framework to account for such contextual losses of empathy based on the psychohistorical approach.
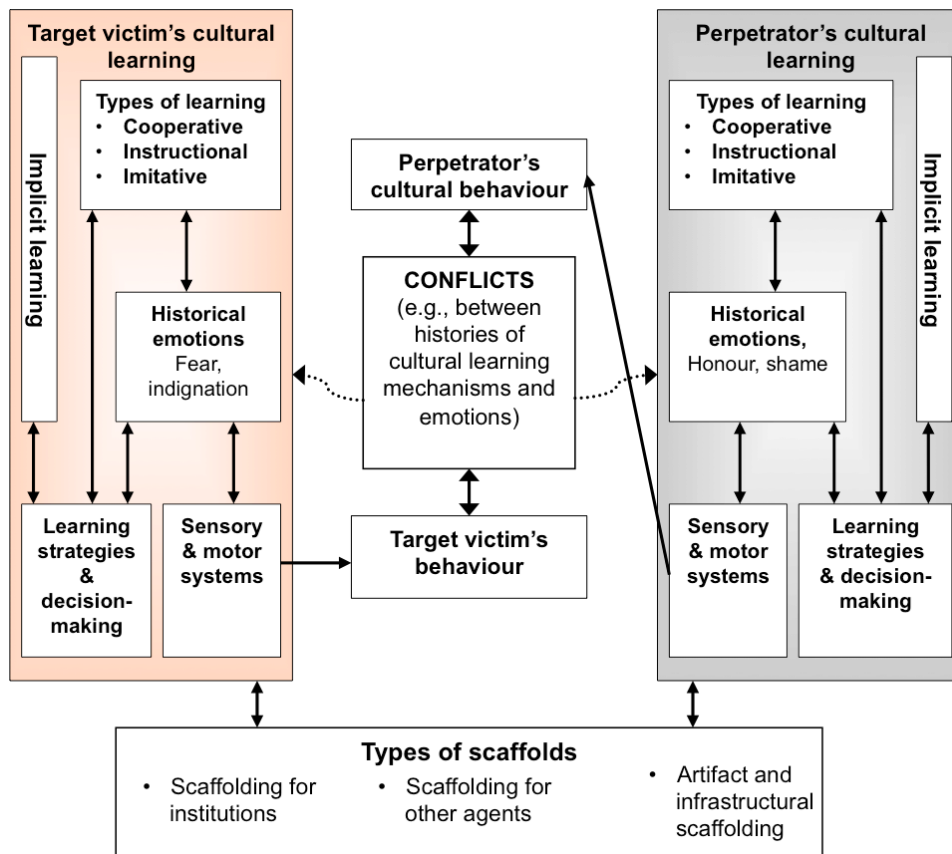
Figure 9-1 Cultural learning mechanisms and sensitivity in honour-related violence and honour related killings
The left-hand panel denotes the historical context of a victim, a target of honour-related violence; the right-hand panel denotes the perpetrator of honour-related violence. Both panels include references to mechanisms of cultural learning. The perpetrator's cultural learning and historical emotions modulate types of sensitivities to the victim's behaviour represented by the dotted lines. Types of scaffolds that influence cultural learning are depicted in the bottommost box; *scaffolding for institutions* and norms such as governments and family councils; *scaffolding for other agents* such as peers and kin; *artefact and infrastructural scaffolding* such as language and religious beliefs and practices. Bold arrows indicate putative causal interactions. See text for details.

The integrative psychohistorical framework I propose incorporates contributions from both (i) mechanistic theories of cultural learning in the biological and cognitive sciences and (ii) contextualistic heuristics and philosophical explorations of the historical contexts that support and modulate the workings of such mechanisms. Some of the relations posited by the psychohistorical model are outlined in Figure 9-1. The schematic aims to represent key interactions between the behaviour of a performing cultural agent who acts as a *perpetrator* of honour-related violence and a *target agent* who is victim of the acts of control and violence.

The mental and social mechanisms of cultural learning

According to the model presented in Figure 9-1, *cultural learning* occurs when a learner's behaviour or mental states become *sensitive to*, or *re-enact* a cultural phenomenon. Cultural learning in that sense occurs when the learner acquires knowledge about, or imitates cultural skills, artefacts, and normative behaviours. As discussed in chapter 8, research about the mechanisms that enable cultural learning have identified a number of core processes, which include imitation, instruction, cooperation, and implicit learning (see left and right panels in Figure 9-1).

Mental and social mechanisms enabling *imitative learning* are involved in cultural learning and cumulative transmission. Although the diversity of approaches to imitation remains a theoretical challenge (Bentley et al., 2011; Hurley & Chater, 2005), researchers in the cognitive sciences have proposed mechanistic models to explain a learner's ability to *imitate an observed action* (for reviews, see Hurley, 2008; Hurley & Chater, 2005). There is evidence that human imitators engage in imitative behaviours that require more than copying a single observed action to replicate or conform to social phenomena. For example, there is evidence that humans adopt *conformist strategies or biases* that minimize the cost of social learning (Richerson & Boyd, 2005).

Following proposals discussed in chapter 8 (Csibra & Gergely, 2009; Tomasello, 1999; Tomasello et al., 1993), and as illustrated in Figure 9-1, I also distinguish basic imitation mechanisms from *instructional learning* (see, however, our hypothesis below about combined learning strategies). As noted by, among others, Tomasello and colleagues (Tomasello, 1999,

2014; Tomasello et al., 1993), there is reason to separate instructional learning, in which a learner is guided by a model or a teacher – as in imitative and instructional learning – from *cooperative learning*, that is, cultural learning as it occurs cooperatively among a group of agents without salient models or supervisors.

As I explain in chapter 8, other findings (Bigand & Poulin-Charronnat, 2006; Dijksterhuis & Bargh, 2001; Zajonc & Markus, 1982) suggest that cultural learning can also occur implicitly. I use the expression *implicit cultural learning* to refer to cultural learning triggered by mechanisms autonomous from the learner's conscious intentions or strategic plan to learn cultural abilities.

The significance of cultural learning for explaining radicalised violence and extreme sacrifices is, I argue, underestimated by Baron-Cohen's (2011) individualistic model. In contrast to the individualistic explanation in terms of psychological traits, a plausible explanation of the negative emotions and empathy erosion of perpetrators' of honour-related violence consists in appealing to the effects of cultural learning. Jonathan Haidt's research on moral decision-making is one of the rare attempts at integrating cultural learning into the processes of moral cognition (Haidt, 2001, 2007). Haidt has provided a conceptual framework that suggests ways to explain how cultural norms influence decisions and volitions in the moral domain.

Haidt (2001: p. 827-828) argues that children learn and embody cultural knowledge through observation and imitation. On his account, children's exposure to and imitation of cultural practices throughout development results in an embodiment of those practices. As a result of this enculturation process, these practices become unconscious and intuitive. In contrast, the persons who learn these practices intellectually as an adult do not necessarily embody them as they tend to be learned in a more semantic and consciously accessible way. Embodied norms acquired through observation and imitation during childhood likely affect moral decision-making and the erosion of empathy in the case of honour-related violence.

In addition to embodied cultural norms, particular value systems are regarded differently across cultures. Haidt (2001) draws from Shweder and colleagues' (1997) theory of the "big

three moral goods," which consist of autonomy (e.g., personal rights, freedom of choice), community (e.g., loyalty, protecting family, honour related), and divinity (physical and mental purity). Honour-related violence seems related to the moral good of community as it functions to protect a family's perceived "honour" (Hossain & Welchman, 2005; Wikan & Paterson, 2008), and it may connect to sacred values associated with religious conceptions of honour.

Baron-Cohen's (2011) model has not investigated these violent behaviours, which are a result of cultural practices based on enculturated moral codes. However, on the basis of analysing the benefits of integrating the theory of empathy erosion with the theory of cultural learning, I propose a series of new *psychohistorical hypotheses* (PH). These research hypotheses are designed to integrate explanations of radicalised violence in terms of psychological mechanisms (such as Baron-Cohen's (2011) model) with explanations of honour-related violence in terms of cultural history and context-specific social phenomena. The hypotheses I propose are derived from the model depicted in Figure 1.

The dependence of honour-related violence on the cultural transmission of sacred values and norms

The first hypothesis that I propose can be expressed as follows:

PH1. Perpetrators of honour-related violence and "honour killings" justify their actions by appealing to *sacred values* and *honour based norms* of social control, which are transmitted by social inheritance and cultural learning in distinctive historical contexts.

According to several accounts, the concept of honour[117] aligns with attributes such as respectability, status, masculinity and standing in the community.[118] A number of works have

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[117] Honour has been described as a socially constructed concept dependent on cultural context, that is, concepts of honour vary according to country of origin, religious affiliations, historical traditions and socio-economic status (Vandello & Cohen, 2003). However, it might be possible to find cross-cultural regularities, which we discuss in the main text.

linked honour with conflict by describing honour as the ethic of the warrior (Taylor, 1989), or the moral code of the fighter (Richerson & Boyd, 2005). In some cases, female family members are responsible for upholding familial honour through virginity, chastity, and fidelity (Idriss & Abbas, 2011).

Some evidence points to the embodiment of cultural norms of "honour" through contextual learning. Vandello and Cohen (2003) state that:

> [i]n some cultures, such honour codes are formal and codified; in others (…) norms of honour tend to be more informal and implicit. (2003, p. 998)

I propose that norms related to honour-related violence and honour related behaviour are socially inherited and embodied through imitation and teaching of historical honour codes, and cooperation between advocates of these codes.

First, although I have not found direct evidence for imitative behaviours concerning honour-related violence, it can be expected that observation and imitation of cultural practices throughout human development enables the embodiment of honour codes in relation to honour-related violence. As Haidt (2001) notes, the role of imitation throughout development enables the embodiment of cultural norms. Thus, exposure of children to norms and violence related to norms of "honour" throughout development is presumably a factor that could explain behaviours abiding by these norms.

Second, some forms of cultural learning can be either informal or formal types of teaching. Presumably a fundamental form of *informal* instructional learning is passed from parent to child. Other types of informal teaching arise through interactions with persons of kin, friends, and older or more experienced peers. For example, when women find themselves in a situation that may be construed as "dishonourable" they likely consult their peers for advice:

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[118] See, Cohen, Nisbett, and collaborators (D. Cohen & Nisbett, 1997; Nisbett, 1993), Wikan and Paterson (2008), Latif (2011), Idriss and Abbas (2011).

> [w]omen who are in violent relationships often turn to friends or family for advice. This type of informal interpersonal counselling might serve as an important means of perpetuating and enforcing cultural norms about what is acceptable and unacceptable behaviour. (Vandello & Cohen, 2003: p. 1003)

This informal type of instructional learning from peers and family members about what is acceptable and unacceptable presumably reinforces cultural attitudes toward honour-related violence.

Formal types of instructional learning are through school and religious teachers. One illustrative example is the experience of an Egyptian man's memory from his school days,

> [my] biology teacher (…) turning to a poster showing the female genital apparatus and pointing to the vagina (…) "here is the site of the family honour." (Wikan & Paterson, 2008, p. 100).

Teaching and instructional learning, whether informal or formal, provide context-specific learning mechanisms for the perpetuation of cultural norms regarding honour-related violence.

Third, *cooperation mechanisms* that scaffold honour-related violence, I propose, comprise governmental and legal institutions as well as family and friend councils that make morally or legally permissible, or provide support to the action of exerting control and killing in the name of "honour." In addition to tactical cooperation between the executioners of an act of honour-related violence, other examples of cooperation mechanisms that scaffold honour-related violence comprise the legal frameworks that make honour-related violence permissible. Elakkary and colleagues (2014) argue that "honour crimes" are supported by the laws and the legal systems governing societies where honour crimes are prevalent. For example, in some jurisdictions, courts of law tend to mitigate the gravity of honour related homicide on the ground that these homicides were performed in the name of a family's honour. In other countries the provocation defence is used, which implies that extenuating circumstances may cause a reasonable man to lose self-control, due to heightened emotions in response to a perceived transgression. This defence downgrades the crime of murder to

manslaughter and ultimately reduces the sentence (Carline, 2011). That the law mitigates premeditated murder downgrading it to manslaughter in the context of "honour" illustrates the manner in which legal institutions can, as *cultural scaffolds*, contribute to perpetuating and legitimising honour-related violence.

Additionally, in areas in some South Asian countries, instead of seeking legal counsel due to rural isolation, honour related crimes are dealt with through tribal councils. Qisas and Diyats are ordinances utilised by perpetrators to grant victims or victim's families compensation in return for forgiveness (Hussain, 2006). The state must recognise forgiveness rights through these ordinances, which annuls formal legal punishment. Again, such tribal based ordinances provide a warrant and justification for honour-related violence.

Furthermore, cooperation mechanisms consist of collectives such as families and communities. Extended family members who feel that their own "honour" is at stake will collectively pressure the immediate family to punish the perceived perpetrator of the "dishonourable" act (Idriss & Abbas, 2011). Wikan and Paterson (2008) write that

> [Honour] is about power and control (…). It has to do with the rights of the collective over the *individual and the individual's* duty to submit. It has to do with the structures and systems, social categories of people indoctrinated into the belief that they exist to serve the system. (2008, p. 16, own emphasis)

The individuals referred to in this case is the female perpetrator of the perceived 'dishonourable' act, and the family members that must conform to punishment rituals in the context of family 'honour.' An apt illustration of these norms inherited from cooperative instruction is offered by this quote from Belfrage et al. (2012) about a 25-year-old Palestinian who hanged his sister with a rope:

> I did not kill her, but rather helped her to commit suicide and to carry out the death penalty she sentenced herself to. I did it to wash with her blood the family honour that was violated because of her and in response to the will of society that would not have had any mercy on me if I didn't. (p. 21)

Cooperation mechanisms supporting practices surrounding "codes of honour" are also supported by evidence of employers and media institutions justifying honour-related violence. According to Cohen and Nisbett (D. Cohen & Nisbett, 1997), institutions in Southern parts of the USA, regions known to employ an "honour code" more than Northern parts, support honour-related violence by attaching less social stigma than Northern regions.

In sum, I propose that cultural learning by means of imitative, instructional and cooperative mechanisms is a fundamental trigger in decisions to inflict honour-related violence. Individualistic models, such as Baron-Cohen's model of empathy erosion, have not considered these cultural learning mechanisms.

The generation of violence from transgressions of cultural norms

The second hypothesis I propose can be expressed thus:

PH2. Honour-related violence and killings are conflicts that can be triggered by transgressions of culturally-inherited norms – in particular, transgressions linked to, and conflicts between sociocultural groups and the norms and practices that define these groups. A number of factors of the conflict between perpetrator and victim of honour-related violence originate from differences in these agents' histories of cultural learning.

Some honour-related violence is linked to conflicts between individuals who defend different culturally-inherited norms, which differ between sociocultural groups. Figure 1 provides a schematic that illustrates the psychohistorical genealogy of these cultural and social conflicts between the perpetrator and victim's cultural heritage.

In some instances of honour-related violence, perpetrators and victims uphold different cultural and moral norms, and the conflict between perpetrators and victims engages group-level values and practices. For example, an increase in honour killings occurring in South Asian immigrant populations in Western countries (Gill, 2009) could be explained by the victims' increased exposure to Western cultural practices and norms. The theory of group socialisation suggests that children engender values and group norms of the environment outside of their home (Harris, 1995: p. 463). Western norms associated with autonomy may

be incompatible with eastern norms linked to community, which are presumably the source of conflict between sociocultural practices of the victim and the perpetrator. Wikan and Paterson (2008, p. 100) discuss these conflicting value systems "[t]he conflict is between, on one hand, principles of gender equality and ideals of liberty and human rights and, on the other, collective clan structures that celebrate patriarchal rule" (2008, p. 100).

Take Fadime's history of cultural learning as an example (section 1). Fadime immigrated to Sweden when she was a child. At 21 years old, Fadime embraced a cultural norm associated with the world outside her family home and chose a man of her choice. This behaviour conflicted with her father and brother's cultural learning of her obligation to marry someone chosen for her.

Honour-related violence that is the outcome of conflicts between sociocultural norms is omitted from Baron-Cohen's discussion on empathy erosion.

The possible influence of cultural learning on emotions and empathy

The third hypothesis specifies a possible link between the mechanisms of empathy erosion, or emotions in moral decision-making, and cultural learning:

> PH3. Some aspects of empathy erosion, and more generally of the role of historical emotions in moral decision-making in honour-related violence, may be by-products of differences in cultural learning.

I use the expression *historical emotions* to refer to the expressive behaviours and feelings that are modulated by social inheritance, cultural learning, and norms (Gibbard, 1990). As cultural practices transform, so do emotions and their expression with that cultural trend (Stearns, 1986). I propose that empathy erosion in honour-related violence can result from conflicting emotions due to cultural learning mechanisms.

"Shame" is traditionally conceived as the inverse of "honour" (Gill, 2009; Idriss & Abbas, 2011; D. E. King, 2008); and women implicitly and explicitly 'know' to feel 'shame' at the thought or act of 'dishonour' (D. E. King, 2008). In Fadime and Farzana's cases (section 1), both deliberately chose to defy their families' explicit orders by choosing men of

their choice. We cannot know what emotions plagued these two women, although we can assume that deliberately defying their families' orders shows signs of rebellion and perhaps indignation at having their lives controlled. It seems likely that these women's learned feelings of 'shame' may have been overshadowed by feelings of 'righteousness' possibly due to increased education in human rights and exposure to Western values (Wikan & Paterson, 2008). This shift in historical emotions from 'shame' to 'indignation' of the victims could explain some instances of conflict related to honour-related violence, as illustrated in Figure 1.

This shift in the victim's emotions from shame to indignation, conflicts with the historical emotions of the perpetrator. According to some perpetrators' normative system, the only way to "wash away" the perceived "shame" of the family resulting from the victim's "transgression" is with the blood of the victim (Hossain & Welchman, 2005; Idriss & Abbas, 2011; Wikan & Paterson, 2008). The unwillingness of a victim to undergo punishment, as in Fadime's case, highlights that 'shame' is no longer a key emotion. The perpetrator's feelings of shame are likely complemented by feelings of anger. During the trial of Fadime's murder, her father repeatedly referred to her as a whore, her death according to him was the "final solution;" he exclaimed "if you had a daughter like that, you would have wanted to shoot her too" (Wikan & Paterson, 2008, pp. 105, 111). The anger seemed to accompany the shame because Fadime did not submit and deliberately defied her Father and families' orders, an act that is unacceptable in cultures of honour.

In sum, historical emotions and feelings modulated by cultural learning are not accounted for in Baron-Cohen's empathy erosion model. I argue that the theory of historical emotions can complement Baron-Cohen's model because it is likely that historical emotion contributes to empathy erosion in honour-related violence. Our psychohistorical heuristics provide a new way to explain honour-related violence, which goes beyond nativist and individualistic explanations.

9.4   Recapitulation

Honour-related killings raise a puzzle for behavioural sciences and moral psychology. As an attempt to shed some light on these puzzling behaviours, I assessed the predictions made by Baron-Cohen's individualistic model of empathy erosion. First, I argued that the limitations of Baron-Cohen's empathy erosion model to explain honour-related violence originate from the fact that the model does not take into account the impact of cultural learning and historical norms and emotions in the domain of moral decision-making. In contrast, I argue that, like a number of other types of violence, we need to explain honour-related killings by means of a theory of moral decision-making that takes into account the modulation of empathy through the influence of cultural learning. To complement individualistic and nativist models, I outlined new psychohistorical hypotheses about moral decision-making and empathy modulation. The theory integrates hypotheses derived from research about the mechanisms of moral judgements with research about cultural learning and historical emotions. In contrast to individualistic models that overlook the impact of cultural histories and norms on empathy modulation, the psychohistorical theory of empathy modulation predicts that violent behaviour toward family members is driven by cultural learning mechanisms. I also argued that empathy modulation could be shaped by context-specific sociocultural norms and histories (e.g., normative feelings, moral norms, legal institutions). According to the account, sociocultural institutions and cultural learning provide supporting structures ('scaffolds') for the justification of honour-based crimes described by ethnographical, historical, and sociological works.

10   Concluding Thoughts

The previous chapters include my most comprehensive attempt to use the psychohistorical framework for explaining core aspects of person identification and control. To conclude this investigation, I will highlight some of the new contributions made by this enquiry, admit some of its limitations, and suggest other research works that might follow from it.

10.1   New aspects and significant conclusions of the enquiry

Some of the claims I made sought to understand and remediate biases reasoning and disputes about person identification and, more generally, cultural practices. Let me recapitulate some of these claims.

The first attempt to overcome the antagonism between mechanistic and contextualistic heuristics in the field of person identification and control

A key suggestion I made on the basis of the psychohistorical framework was that scholars routinely make use of heuristics that are distinctive of the field of research in which they work. If the claim is correct, the framework implies that the conflict between the "two cultures" involves, among other topics of contention, a clash resulting from the pervasive use of different classes of first- and second-order heuristics. Roughly, mechanistic and reductionistic heuristics are typical of decision-making in the biological and cognitive sciences. In contrast, contextualistic heuristics are distinctive of the interpretative decision-making that is widely taught in the humanities and social sciences.

In present work, I have explained the form that these antagonisms (between mechanistic (or universalistic) and contextualistic heuristics) take in scholarly enquiries into person identification (chapters 4-5) and cultural learning (chapter 8). Previously, I acknowledged the existence similar tensions in the research work about artistic appreciation and artistic practices

(Bullot & Reber, 2013a, 2013b). However, with hindsight, one of the lacunae of my research on artistic practices was that it did not clearly acknowledged the biases inherent to both contextualistic and mechanistic heuristics. The previous chapters present provide examination of the conflict between contextualistic and mechanistic heuristics that is more detailed than in my earlier works. With this new material, I hope to have convinced some sceptics that the antagonism between mechanistic and contextualistic heuristics is a hindrance to our understanding of the topics of identification, social control, and cultural learning.

The fecundity of intermediate-scale psychohistorical models in research on identification and cultural phenomena

Another core aim I hope to have (at least partly) achieved is to show the productivity of intermediate-scale models that combine mechanistic and contextualistic heuristics. The particular psychohistorical framework and theories that I have defended belong to the class of these intermediate-scale models. However, other models can serve similar integrative functions. These models can occupy a helpful middle-ground between (i) the micro-scale of highly-focused experimental studies conducted in biological and cognitive science labs and (ii) a variety of macro-scale models, such as evolutionary models and historiographical models of long-term historical structures.

Intermediate-scale models, such as the psychohistorical theory of person identification, are useful to articulate mechanistic explanations, which often develop from the standpoint of micro-scale empirical research (e.g., the studies of the brain mechanisms governing face recognition and imitative behaviours), and contextualistic historical explanations, which often focus on historical contexts that are particularly challenging to interpret in purely mechanistic terms (e.g., sociological enquiries into social surveillance).

Intermediate-scale psychohistorical models can also be useful for launching philosophical enquiries that investigate gaps between common sense and scientific hypotheses. In the case of person identification, for example, the psychohistorical theory suggests ways to understand the gaps between the folk psychology of persons and the cognitive sciences of the mechanisms of person identification.

Lastly, intermediate-scale models like the psychohistorical theory can generate new testable empirical hypotheses. This can be illustrated with the psychohistorical models of artistic practices. Building from ideas sketched in Bullot (2009a), I proposed in Bullot and Reber (2013a, 2013b) and Bullot (2014c) a psychohistorical framework for integrating mechanistic and contextualistic approaches to the sciences of art. In line with the present work, I argued that the antagonism between contextualistic (*qua* historical) and mechanistic (*qua* universalistic) approaches in the research about artistic practices was counter-productive; and I defended a psychohistorical methodology as an alternative to the existing *status quo*. Although some scholars in the biological and cognitive sciences have expressed scepticism (e.g., Fitch & Westphal-Fitch, 2013; Graham, 2013; Juslin, 2013), the psychohistorical arguments are taken into consideration in new integrative empirical research (Alter, 2013; Chatterjee & Vartanian, 2014; Gelman, Meyer, & Noles, 2013; Konečni, in press; Kozbelt & Ostrofsky, 2013; Leder, 2013; Newman, 2013; Thompson & Antliff, 2013; Wilson, 2013). Importantly, the argument that contextualistic approaches and heuristics were useful to define new empirical methods has led to the development of new experimental research that corroborated predictions made the psychohistorical theory (e.g., Jucker, Barrett, & Wlodarski, 2014; Newman, Bartels, & Smith, 2014; Ostrofsky & Shobe, 2015; Swami, 2013).

The psychohistorical critique of individualism and ahistorical reductionism

Another contribution of intermediate-scale psychohistorical models is to show the limitations of the models of person identification – and cultural learning – guided by the reductionistic assumptions of psychological individualism. As I argued in chapter 4, the systematic adoption of a reductionistic form of individualism can narrow the scope of the explanations and screen out major social phenomena (e.g., deception, cooperation, cultural learning) from the *explanandum* domain of the cognitive sciences of person identification. Thus, psychological individualism can hinder multidisciplinary integration in several fields investigating identification behaviours and cultural cognition.

10.2 Limitations of the present work and the future of psychohistorical research

Although I hope to have made some progress toward achieving the previous aims and a few others, the psychohistorical project I propose remains incomplete in a variety of ways. For example, chapter 7 has just outlined a psychohistorical strategy to engage with the complex relationships between identification mechanisms and social control. A more comprehensive account of the role of person identification in social control would require a more thorough analysis of the evolution and history of the mechanisms of social control.

Likewise, I made a number of suggestions concerning predictions made by the psychohistorical theory about the different types of misidentification. However, here again, these suggestions would need to be presented into a more systematic framework, one that can provide a synthesis both mechanistic and contextualistic contributions to the explanation of person misidentification.

These limitations are, I suppose, inevitable at this stage of the project because the programme of psychohistorical research I propose is quite demanding. To conduct adequately a psychohistorical investigation, an enquirer needs to be in command of knowledge produced by both the mechanistic and the contextualistic traditions of enquiry. Because the psychohistorical project faces these challenges, I will conclude by mentioning some other research investigations that are called for by the psychohistorical project as it stands.

Person identification and control and the arts

I introduced the psychohistorical framework as a philosophical methodological framework aimed at assisting multidisciplinary research on artistic practices (Bullot, 2009a, 2014c; Bullot & Reber, 2013a, 2013b). The present research on person identification and control provides several theoretical enrichments to the psychohistorical framework. Consequently, the project suggests the need to integrate the insights from the present study into a psychohistorical theory of artistic appreciation and production. Specifically, the new components that I think need to be more clearly integrated into the theory of artistic practices include the analysis of heuristics (chapters 3-5), the theory of cultural learning (chapter 8), and the analysis of person control along with the arguments from mechanistic control (chapter

7 and 9). For example, one of the core ideas of my initial psychohistorical account of art was the hypothesis that work of arts are artefacts devised to perform mental and social functions. This hypothesis entails that works of art are artefacts designed to manipulate – and thus partially control – the mental states and behaviour of persons. This suggests the need to integrate the psychohistorical account of social control I have outlined with a theory of the forms of control exerted by works of art and design.

Investigating other relations of identification and control

As was noted by Gelman, Meyer, and Noles (2013), the psychohistorical framework suggests general hypotheses about the tracking of objects and agents, thus hypotheses about phenomena beyond the realm of artistic cognition and practices. I agree with this suggestion. In the spirit of that proposal, the present work has applied the psychohistorical strategy to the study of person identification and control. However, the approach could be extended to *any* other relations of identification and control.

The basic motivating idea of the psychohistorical framework is that our cognitive and emotional relations to (natural or artificial) individuals are psychohistorical relations. This is because the ontology of such individuals is historical; and also because our understanding of these individuals and relations requires use to track and explain of the causal histories of these individuals. This idea of suggests a number of new research topics worth exploring, such as the identification and control biological individuals in general or the identification and control of artefacts.

In sum, because it provides an open working space for respectful interactions between mechanistic and contextualistic explanations, the psychohistorical framework provides opportunities for new multidisciplinary collaborations, hypotheses, and models of variety of cultural practices and identification skills.

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