How temporal discretion supports interagency coordination: Sweden’s intersectoral fight against antimicrobial resistance

Martin Stangborli Time

Abstract
This paper advances a theoretical framework on the impact of time rules on the administrative coordination of policies that deal with long-term, transboundary challenges. Its empirical focus is on the fight against antimicrobial resistance—AMR. The paper’s framework concerns how government agencies employ time rules in coordination so as to respond to this open-ended policy challenge. To illustrate the framework’s usefulness to studies of coordination, the paper examines Sweden's intersectoral coordination on AMR. The case study draws on interviews and policy documents. Its findings give support to the paper’s argument, namely that government agencies are more likely to coordinate voluntarily if they have discretion in setting and administering coordinative time rules.

Keywords Horizontal coordination · Temporality · Government agencies · Transboundary challenge · Antimicrobial resistance · Sweden

Introduction
Global challenges such as climate change and antimicrobial resistance (AMR) come with predictions of unprecedented damage in the (not so) distant future (Review on AMR 2016; Lenton et al. 2019). To steer clear of the worst-case scenarios, the international community is calling for urgent and coordinated cross-sectoral/-territorial action (Intergovernmental Panel on Climate Change [IPCC] 2018; UN Interagency Coordination Group on Antimicrobial Resistance [IACG] 2019: 1). This paper focuses on a challenge to temporal governance that rarely is touched upon in the literature, i.e., the management of the distinct temporal schedules of organisations

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How temporal discretion supports interagency coordination:

coordinating to prevent a transboundary, long-term (“creeping”), challenge—instanced in the paper with AMR.

The ambition of the paper is twofold. It first introduces a less studied relationship within the public administration literature of the impact from time rules on government agencies’ interaction-patterns in coordination. Drawing on the temporality and coordination literatures, it sets out a framework with propositions on the expected “type” of coordination (horizontal–imposed vs. horizontal–voluntary) from adding temporal demand (through rules stipulating the time horizon and timetable in coordination) to agencies’ recurring responsibilities (embodied in their annual cycles). Secondly, it illustrates the usefulness of the theoretical framework to the study of coordination. The paper thus examines a case study of Sweden’s inter-agency/sector fight against the surge of pathogenic resistance to antimicrobial medicine. The combination of extensive usages of antimicrobials in healthcare, farming, etc., and pathogens’ high versatility means the fight against AMR cannot be isolated to one policy sector or territory. AMR thus poses a coordination challenge requiring the involvement of manifold actors in synchronous problem-solving.

Adam et al. (2019: 501) remark that “even firms [with] complete confidence in each other must still invest time and effort in coordinating and synchronising their actions across institutional boundaries”. The paper connects this investment to agencies’ temporal discretion to sustain or minimise participation in coordination. The temporal discretion of an agency concerns its ability to decide when, in what order, for how long tasks are carried out by the organisation. Temporal discretion means there always is some possibility to avoid or differently address the demands set by time rules and issue-specific time frames (Oliver 1991; Goetz and Meyer-Sahling 2009: 187). Granting it to agencies in long-term, transboundary, coordination thus easily spurs association to deviation and delay. This paper’s approach is nevertheless different. It argues that agencies entrusted with temporal discretion are more likely to develop commitment and voluntariness to the coordination process (even if it comes second to agencies’ primary responsibilities). Temporal discretion probably needs complementing by other measures to give momentum (financing and so on). However, the voluntary interactions experts deem necessary to achieve transboundary coordination (cf. World Health Organization [WHO] 2019: 18, 25), suggests partakers with a positive-sum perception of the temporal demand from coordination and primary, organisation-specific, operations (Göhler 2009: 31). This study argues that this is more likely to manifest when agencies are entrusted temporal discretion to administer the endogenous time rules in coordination.

The paper examines the influence from politically formalised time horizons (longer to shorter) and timetables (less to more fixed) on agencies’ likely interaction-patterns in coordination (Bouckaert et al. 2010: 35). Its contribution is thus to combine the literatures on the temporality of exogenous policy problems (Haydu 1998; Pierson 2000; Jacobs 2011) and the temporality endogenous to problem-solving processes (Goetz and Meyer-Sahling 2009; Howlett and Goetz 2014: 478, 486). Theorising the interconnection between these elements of time (Adam 1998; Bulmer 2009), the paper sets forth a comparative approach to study temporality as a conditioner of cross-sectoral and/or cross-territorial coordination. The paper finally adds to the literature on agency management of (sometimes deviating) primary and
secondary structures – embodied in this paper by the temporal schedules of agencies (primary responsibilities) and coordination (secondary task) (Egeberg and Trondal 2018).

Theoretically, the paper draws on two reverse interaction-patterns in coordination, i.e., imposed vs. voluntary horizontal coordination. The former category holds a marked element of hierarchy, in that the objectives and procedures of horizontal coordination are narrowly stipulated by a competent authority (Bouckaert et al. 2010: 36–37). The coordinating agencies are “time-takers” (Goetz 2014a: 578) who receive instructions on when, how often, for how long they are to interact. The agencies more likely display reactive behaviours, encompassing interactions (particularly cross-sectoral ones) that are less voluntary and limited to what is formally required (Oliver 1991). The paper captures this interaction-pattern by referring to agency usage of temporal discretion in accordance with a zero-sum logic. The time allocated to coordination (secondary task) is thus weighted carefully by the agency in order not to hurt progress on primary responsibilities. The latter category, voluntary horizontal coordination, suggests agencies with a willingness to invest time and resources in the task plus hold a sense of solidarity towards each other (Bouckaert et al. 2010: 44). There may be instructions from a competent authority, but these are broad and open for revisions by the coordinating agencies. The interaction-pattern of the agencies is more likely distinguished by proactiveness with agency officials taking the initiative to interact and plan how to pursue the coordination task. Thus, they assume the role of “time-setters” (Goetz 2014a: 578) in coordination. In terms of temporal discretion, the agencies take a positive-sum approach thus investing time voluntarily into coordination (secondary task). The presumption is that they understand coordination to help realise their primary responsibilities too (Dowding 2008; Göhler 2009).

Of significance to these interaction-patterns in coordination is whether the formal regulation of time horizon (the duration of the task) and timetable (the timing, frequency, sequencing of interactions and intermediate tasks) is more or less fixed. This establishes the agencies’ scope of temporal discretion to decide how to manage the coordination against a long-term, “creeping”, challenge (how long to coordinate, when/how often to interact/exchange information, in what order to introduce preventive measures). If granted the necessary freedom of manoeuvre, the agencies get more opportunity to work out the time horizon and timetable to accommodate primary annual cycles. This, presumably, establishes agency commitments to the coordination process.

The problem of AMR generates a plethora of technical issues related to disease prevention and control, hence the substantial presence of experts and professions in the efforts to contain its spread. The central units of this paper are government agencies, which in the case of Sweden possess the major share of technical expertise within the central administration (Niklasson 2012: 246). Government agencies operate one administrate level below their parent ministries (Verhoest et al. 2012).

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1 The paper focuses on horizontal lines of interaction to highlight the challenge to coordination from separate policy jurisdictions.
This presumably gives them a better position to take the longer view because of less exposure to the electoral clock (Majone 1996; Goetz and Meyer-Sahling 2009: 186; Goetz 2014b: 385). Whereas this feature is well documented, less is known of whether and how time rules and temporal discretions condition interagency coordination (Peters 2015; Molenveld et al. 2020). The paper’s case study illustrates, first, how the formal time rules in Sweden’s coordination on AMR provide the partaking government agencies with temporal discretion. Second, how the government agencies cooperate to formulate the coordinating mission’s objectives and timetables. Third, how there is variation in the presence of the government agencies designated for participation in AMR coordination. The latter observation indicates a potential caveat to the paper’s propositions, namely the agencies’ varying ability to allocate time or keep pace with coordination’s progression. The paper suggests this to be revealing of variation in the historically accumulated know-how of the agencies: of managing disease prevention and control and AMR particularly (Haydu 1998). This provides the agencies with different starting points in knowing how to employ temporal, granted, discretion in coordination.

The paper sets out by first outlining the temporal and transboundary properties of the AMR challenge. Secondly, it introduces the framework to study formal time rules’ influence on interaction-patterns in horizontal coordination. Thirdly, the Swedish case study is presented and applied to illustrate agency interaction-patterns in coordination with less time rule fixation. The paper concludes by recounting the essence of the proposed framework, and by suggesting ways to further advance it.

The long-term, transboundary, challenge of antimicrobial resistance

Antimicrobial resistance (AMR) happens when pathogens (bacteria, viruses, parasites, or fungi causing disease) become resistant to treatment with antimicrobial medicines (WHO 2015). The introduction of antibiotics after world war II revolutionised mankind’s ability to treat infectious disease in humans and food-producing animals. However, the ever-increasing use of the “miracle drugs” has brought about AMR, which now is recognised “a global crisis that risks reversing a century of progress in health” (Edqvist and Pedersen 2001: 93; IACG 2019: 4). By 2050, an estimated 10 million people worldwide will die yearly from causes related to AMR (currently 700,000). Moreover, 100 trillion USD of accumulated economic output will be at risk (Review on Antimicrobial Resistance 2016: 4).

Unlike the conventional conception of crisis (Rosenthal and Kouzmin 1997: 279), AMR does not hold the element of (evident) time compression which tends to “fast-track” critical (“do or die”) decisions on the situation. Although in some corners of the world the situation is already alarming (c.f. WHO 2014), the scenario where one loses the efficacy of antimicrobial medicine entirely is yet to manifest in our time. AMR is a “creeping” challenge which foreshadows “disastrous impact within a generation” (Rosenthal and Kouzmin 1997: 279; Boin and ’t Hart 2003: 545; IACG 2019: 1; Boin et al. 2020: 122). This creates a troublesome temporal challenge to problem solving, namely the uncertainty of how much time there is left to avoid the “antibiotic apocalypse” (McKie 2017). Agencies involved in the fight against
AMR, could thus be expected to partake in preventive action for the unforeseeable future (Bouckaert et al. 2010: 30–31; Jacobs 2011; Peters 2015: 18–19). To sustain such time allocation can be difficult if there is intersection with, (a), the agencies’ recurring, sometimes pressing, primary responsibilities (Linz 1998; Molenveld et al. 2020), or (b), additional crises such as the coronavirus pandemic (Interview G 2020; personal communication, COVID-19 Health System Response Monitor 2020²).

The missing element of (evident) time compression suggests that partakers in coordination have more time for discussion (or disagreement) on how to prevent AMR (Brunsson 2000). This is further complicated by AMR being a transboundary challenge that transcends policy sectors and territorial borders (Ansell et al. 2010). Thus, antimicrobial medicines are not only essential to health care provision, but also to disease prevention and control in farming. Pathogens developing resistance to antimicrobial medicines also hold the potential to spread across the ecosystem (humans, animals, water, etc.). Hence, the emphasis to involve actors from the health, food and veterinary, and environment policy sectors, in the fight against AMR (cf. WHO 2015: 5). However, with multiple voices come substantial potential for disagreement and stalemate on the contents (what to do) and procedures (when, in what order) of AMR coordination. For agencies less eager to partake in the endeavour, there is ample opportunity to curtail time investment in favour of primary responsibilities.

Agency interaction in horizontal coordination

To capture variation in how agencies interact in coordination, the paper makes a distinction between imposed and voluntary horizontal coordination and connects them to two reverse logics behind agency usage of temporal discretion, “zero-sum” and “positive-sum” (Göhler 2009: 28).

The interaction-patterns of voluntary, horizontal, coordination, are based in solidarity across the partaking agencies. This suggests the kind of commitment experts deem necessary to mount comprehensive fights against AMR (WHO 2019: 1–2). The impetus to such interaction-patterns is rooted in agency perceptions of secondary tasks and primary responsibilities as positive sum (Göhler 2009: 31–32). Each coordinating agency thus perceives a combined participation in the fight against AMR and management of primary responsibilities to have mutual benefits. The paper identifies two agency uses of temporal discretion that it considers indicative of this logic. Firstly, the discernible allocation of time by the agency leadership to enable staff to prioritise tasks beyond their primary responsibilities. This pattern is likely sustainable because commitment to the coordination task comes from within the agency (Dowding 2008: 26; Peters 2015: 19). Secondly, if the agencies’ annual cycles interfere with coordination’s progress, the agencies engage in the collective design of measures to improve time management in coordination. This underlines their interest in making coordination progress optimally.

² Available at https://www.covid19healthsystem.org/mainpage.aspx.
The reverse spectrum of interaction-patterns, and presumably not so conducive to the fight against AMR, encompasses agencies’ more reactive, in some cases evasive, participation in coordination. If the follow-up of coordination adds too much weight on primary operations, the agencies may use temporal discretion to minimise the time allocated to secondary tasks (i.e., coordination) and preserve progress on primary responsibilities (Oliver 1991: 164; Linz 1998: 22; Molenveld et al. 2020: 10). Interaction, then, is accompanied by a zero-sum perception of the temporal demands of secondary tasks and primary responsibilities. The underlying rationale can be outright inability, meaning agency officials cannot prioritise both or lack of commitment to the coordination process. The more moderate expression is to adopt a reactive modus operandi in the interactions with coordination partners. The less moderate expression is to knowingly miss out on set timetables and time horizons. This eventually fosters interaction-patterns in coordination that are less stable (Dowding 2008: 26).

**Time rules in horizontal coordination**

Whereas the paper’s dependent variable focuses on the likelihood of certain usages of temporal discretion by the coordinating agencies, the independent variables concern the time rules (time horizon and timetable) that regulate the agencies’ temporal discretion and, ultimately, freedom of manoeuvre in coordination. Initially emphasised by Goetz and Meyer-Sahling (2009), time horizon concerns the polity and timetable the politics-dimension of coordination. To regulate the former is to stipulate the temporal outlook of the agencies (how long to perform the task), the latter, the temporal schedule of the coordination process (the timing, frequency, or sequencing of interactions and intermediate tasks). The conceptual distinction reflects the assumption that behaviour vis-a-vis a timetable leaves more room for agency (usage of temporal discretion) than vis-à-vis a set time horizon. Thus, to bypass a time horizon can have serious consequences, especially if the one in question concerns a threatening challenge.

**Time horizon**

In the formative phase of coordinated action against a policy challenge, the competent authority – e.g., a government ministry – usually introduces a time horizon stipulating the duration of the coordination task. A secondary time horizon is thus added to the temporal outlook of agencies, whose primary time horizons serve organisation-specific demands (Goetz and Meyer-Sahling 2009: 187). Longer time horizons in coordination suggest extended temporal discretion for the agencies to accommodate the added temporal demand to their primary deadlines. Shorter time horizons add pressure on the agencies to meet expectations sooner rather than later, thus narrowing temporal discretion and scope for internalising beyond the “mechanical achievement of [secondary] tasks” (Selznick 1957: 27; Peters 2015: 19).

The temporal properties of the challenge – its course of development (acceleration) and estimates of (a) damage potential (short to long-term) and (b) time frame
before it is too late to intercept – underlie the stipulation of the coordinated response’
time horizon. If there is escalation (Rosa 2009: 86), and the short-term consequences
from a failed interception are severe, the response’ time horizon is likely to be short.
One typical example is the wildfire (think of the seasonal eruptions in California,
US, and the 2019–2020 bushfire season in Australia) which if unchecked can spread
at high speeds and burn up almost everything in its path. To contain the fire, rescue
people, animals, and treat the wounded, require immediate and coordinated actions.
The wildfire’s temporal properties thus make for a shorter time horizon to put up the
coordinated response. Such “all hands on deck” mobilisation requires the partaking
agencies (fire brigades, health services, state administrations, etc.) to give less priority
to, or ultimately set aside, their follow-up of primary responsibilities. Agencies
are likely to do just that if they expect the added constrain on temporal discretion to
apply for a limited time span. Thus, the concerted shift to “inferno prevention” mode
is, on the one hand, likely instigated by the wildfire’s suddenness, on the other hand,
likely sustained by the expectation that “all hands on deck” mobilisation is tempo-
rary\(^3\) (the fire will burn out at some point). Translated to the theoretical framework
of this paper, interagency action to manage wildfire does not add a lasting constrain
on the agencies’ capacity to follow-up primary responsibilities.

If the policy challenge’s damage potential is projected to materialise in the long-
term, adding shorter time horizons to its coordinated response enhances the like-
lihood for reactive agency interaction-patterns (Jacobs 2011: 5; Peters 2015: 19).
The AMR challenge is on the increase (European Centre for Disease Prevention
and Control [ECDC] 2019a), however, its acceleration is less visible than the erup-
tion of, e.g., a wildfire. The urgency factor being less evident (“for all to see”), pre-
sumably gives the agencies higher thresholds to accommodate the added temporal
demand from, secondary task, coordination. It furthermore is less easy to establish
the time frames for preventive work against challenges such as AMR. The situation
with AMR worsens continuously, and the long-term consequences from failed inter-
ception are disastrous (IACG 2019). Still, it is not evident how much time there is
left to prevent the worst-case scenarios from AMR (McKie 2017). Given the tempo-
ral properties of AMR, governments may decide to introduce longer time horizons
to the agencies coordinating its containment. The most evident implication is the
signalling to the agencies that they are in this for the long-term. Thus, the agencies
get more opportunity for deliberation on how to accommodate the time horizon(s) in
coordination to their primary time horizons. This is not to say that longer time hori-
zons automatically facilitate voluntary interactions in horizontal coordination. The
assumption is rather that longer time horizons in coordination, make the agencies
more likely to discover positive-sum linkages, or win-wins, between their follow up
of primary responsibilities and coordination as secondary task.

Propositions P1a and P1b summarise the argument. They apply to long-term pol-
icy challenges where the time frame to prevent worst-case scenarios is uncertain.

\(^3\) This might change if the wildfire seasons get ever longer as has been predicted by the Intergovernmen-
tal Panel on Climate Change (IPCC 2019: 14).
• P1a: The longer the formal time horizon in coordination, the higher temporal discretion of the coordinating agencies. Agencies granted higher temporal discretion are more likely to interact voluntarily in horizontal coordination.

• P1b: The shorter the formal time horizon in coordination, the lower temporal discretion of the coordinating agencies. Agencies granted lower temporal discretion are less likely to interact voluntarily in horizontal coordination.

**Timetable**

The timetable in coordination establishes the schedule showing how the process is to be organised across time. It encompasses the frequency and density of meetings to exchange information, grids specifying the timing and sequencing of intermediate tasks, and procedures for when or how to adjust future operations. In laying out these directions, the timetable guides the agencies on mobilisation to achieve synchronous interaction in coordination (Goetz and Meyer-Sahling 2009: 189).

Given the plausible need for longer time horizons in the fight against AMR, timetables with higher levels of fixation might aid the competent authority with keeping the agencies’ behaviour in check. A timetable that is more fixed adds to the constrain on partaking agencies from (secondary task) coordination. The fixed timetable is likely to be a better match to some (not all) agency primary timetables (embodied in their annual cycles). Echoing Oliver’s (1991: 164) theorisation on how organisations respond strategically to institutional pressures for conformity, the agencies that find coordination’s constrain on primary operations is too invasive, use temporal discretion to reduce their participation in agency interaction. Timetable fixation could still generate anticipatory behaviour in coordination, especially if deviations from the formal schedule trigger serious repercussions (economic, reputational). However, agency interactions incentivised by fear of the “stick” are less likely voluntary, thus endangering coordination’s progression in the long run (Dowding 2008: 26).

The alternative approach is for the competent authority to introduce a coordination timetable that is less fixed. The competent authority gets less opportunity to control for agencies breaking ranks or paying lip service to the schedule in coordination. The agencies, meanwhile, get more discretion to decide internally and with fellow coordinators, how to organise the preventive action over time. While acknowledging the risk for less synchronous interaction, this paper assumes less timetable fixation to make the agencies more likely to cultivate a commitment to the process and objectives of coordination. Thus, a timetable with less discretionary constrains not only make the agencies more likely to acquiesce – the prediction by Oliver (1991: 160, 166) – but also to contribute by filling in the gaps of the competent authority’s time rule. Flexibility in how to organise to meet the time horizon of coordination, calls on agency inputs to the drafting of timetable specificities. The agencies are thus more likely to use their temporal discretion to negotiate a coordination timetable that goes with their primary timetables. Hence, the stronger likelihood that they discover the secondary task of coordination is a positive sum “carrot” to promote.
Propositions P2a and P2b summarise the argument which applies to long-term policy challenges where the time frame to prevent worst-case scenarios is uncertain. Figure 1 illustrates the expectations in P1ab and P2ab.

- P2a: The less fixation of formal timetables in coordination, the higher temporal discretion of the coordinating agencies. Agencies granted higher temporal discretion are more likely to interact voluntarily in horizontal coordination.
- P2b: The more fixation of formal timetables in coordination, the lower temporal discretion of the coordinating agencies. Agencies granted lower temporal discretion are less likely to interact voluntarily in horizontal coordination.

Case study rationale and data material

The remainder of the paper is devoted to empirical illustration of the above propositions on formal time rules and agency interaction in coordination. The ambition is to show the usefulness of the paper’s theoretical framework to comparative studies of coordination. To this end, the paper draws on a qualitative case study of Sweden’s intersectoral coordination to prevent AMR from proliferating. Sweden’s inclusion of 20 semi-autonomous government agencies with distinct temporal outlooks, suggests difficulty with establishing and sustaining coordination on AMR. Still, Sweden is recognised as one of the leading countries in the fight against AMR (Interview J 2019). The rationale behind the Swedish case is to illustrate how formal time rules in coordination come to influence partaking agencies’ use of temporal discretion, and thus, way of interacting in coordination. Observing variation in the agencies’ accommodation of coordination’s temporal demands, the case study is a reminder
that propositions P1ab and P2ab are not given. According to one interviewee (G 2019, author’s translation),

many [agency representatives] are very active, very much proactive coordinators, whereas others are more like ‘one does what one is supposed to, but not so much more’. For my own part, we [s/he’s unit] are slightly short on resources now, which again makes that kind of work [proactivity] more difficult. Focus then falls back on doing what has already been formalised.

The main bulk of data comes from policy documents and interviews with Swedish senior officials (N = 13) in 2017 and 2019. The interviewees were selected on basis of a pre-screening of which agencies and government ministries (i.e., competent authorities) participate in Sweden’s coordination on AMR. The relevant organisations were then approached by e-mail, on which the interviewees consented to contribute to the study. Most of the interviews (all except three through Skype and one by phone) were completed face-to-face, and all except one were audio recorded. The analysis of the interview transcripts followed a deductive-inductive strategy where the paper’s propositions P1ab-P2ab provided direction. Each interview has been anonymised and allotted a capital letter to ease the in-text citations (see below references for a comprehensive list of interviews which includes the assigned in-text capitals).

The quality of data makes for one noteworthy limitation of the study. Thus, the dependent variable only refers to likely interaction-patterns in coordination. This follows from the application of interview data encompassing senior officials’ historical reproductions and impressions of Sweden’s work on AMR. However rich in detail, these data essentially express the attitudes, not the behaviour of the interviewees. To support the interviewees’ observations, the analysis draws on insights from policy documents (action plans, strategies, evaluations) generated during the coordination process.

Sweden’s intersectoral fight against AMR

Sweden belongs to the group of countries4 with low levels of pathogenic resistance. At the bedrock of Sweden’s approach to AMR is a state-level coordinating mechanism (mechanism) established in 2012 to accommodate a recommendation by the EU Council (Public Health Agency of Sweden [PHAS] 2014: 23, 2017). The main objective has been to establish a structure to facilitate intersectoral information exchange and preventive action against AMR (Government Offices of Sweden [GOS] 2012: 3; PHAS 2017, 2014: 23). Three sectors are especially present in the mechanism: health, food and veterinary, and environment. There are 25 participating actors: 20 government agencies, the Association of county (regional) communicable disease officers, the County administrative boards, plus two professional

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4 Other notable exceptions are Finland, the Netherlands and Norway.
networks, STRAMA\(^5\) and ReAct. This reflects Sweden’s specialised state apparatus, where agencies administer narrow, sometimes close to overlapping,\(^6\) jurisdictions (Interview F 2019).

Two politico-administrative features (both constitutionally embedded) are particularly relevant to the imposition of time rules in Sweden. First, local self-government limits the capacity of the government (agencies included) to instruct local municipalities and regional county councils (Hall 2016: 9). In the health sector, competence is shared between the central state and the 20 regions and 290 municipalities (PHAS 2014, 2017: 20). In the food, veterinary, and environment sectors, the government shares competences with regional, local, and European institutions, thus adding another locus of authority (and potential “time-setter”) to attend to (Ekengren 2002; Goetz 2014a; Interview D 2019). Local self-government limits the scope of the mechanism to state-level activities where two or more agencies are involved (PHAS 2017: 5). Agencies may, and do, produce policy guidelines and recommendations,\(^7\) but their implementation at regional and local levels follows mainly on a voluntary basis (Niklasson 2012: 252; Interview H 2019).

Second, Sweden’s central state has a dualist structure that gives agencies a considerable degree of autonomy vis-à-vis their parent ministries (Hall 2016: 3). This is evident in, (a), the discretion of agency managers (directors generals) to decide on issues pertaining to internal organisation and recruitment (Niklasson 2012: 252; Hall 2016: 4), (b), the government’s missions to the AMR mechanism emphasising the preservation of agency fields of responsibility (GOS 2012, 2017), and (c), decisions at the ministerial level needing consent from all ministers within the government. The implication is a difficulty for individual ministers and ministries to subordinate the agencies to their exclusive will (Hall 2016: 2). In principle, the time rules of the AMR mechanism are a concern for the entire government collegium (hence, the paper’s reference to government when mentioning Swedish ministries). In practice, the follow-up of the mechanism rests with the Ministry of Health and Social Affairs and the Ministry of Enterprise and Innovation (food and veterinary policy) (National Board of Health and Welfare [NBHW] 2015: 14).

**Time horizons**

Sweden at present holds a favourable position vis-à-vis the global surge of AMR (WHO 2014: X; ECDC 2019b). One interviewee (F 2019) drawing parallels between the challenges of AMR and climate change, remarks there still is time to

\(^5\) Swedish Strategic Programme for the Rational Use of Antimicrobial Agents and Surveillance of Resistance.

\(^6\) For instance, the Swedish Board of Agriculture’s responsibilities in disease prevention and control is confined to living animals, whereas zoonosis outbreaks fall under the remit of the National Food Agency (Interview E 2017).

\(^7\) Besides maintaining a few binding regulations such as hygiene in health care facilities and veterinary practice, agencies in the main provide policy guidelines and recommendations for local and regional authorities to adopt voluntarily (Interviews F 2019; H 2019).
plan and prepare for future, less favorable, circumstances. Emphasis in Sweden is on the long-term, complex, task of preserving the efficiency of antimicrobial medicines (Interviews D 2019; F 2019; G 2019).

When the government instructed two of its agencies—the National Board of Health and Welfare (NBHW) and the Swedish Board of Agriculture (SBA)—to set up a mechanism to facilitate inter-agency/-sector coordination on AMR, it stipulated a six-year time horizon (2012–2017) of the mission (GOS 2012). The NBHW and SBA were to report to the government (Ministry of Health and Social Affairs) at each year’s closing on the mechanism’s activities and overall progress. The 2016 report was to include an evaluation by all the partaking agencies on the functioning of the mechanism (GOS 2012). According to one interviewee (H 2019), introducing the mechanism was no easy task due to some agencies’ reluctance to engage in the coordination of AMR preventive actions. Overall sentiments towards the coordinating mechanism (a secondary mission to most participants) appear since to have changed for the better. The first evaluation of the mechanism thus recommended the mission to be made permanent (PHAS 2016). The government chose to accommodate most of the evaluation’s recommendations, but the renewed mission cut the mechanism’s time horizon down to three years (2018–2020) (GOS 2017).

Some explanatory leverage for this move may be found in the government’s finalising of a Swedish AMR-strategy the previous year (GOS 2016). The government stipulated the mechanism’s mission to be linked up with the strategy and thus to run until 2020 (GOS 2017). Extending the mechanism’s time horizon by making it permanent would weaken the government’s ability to follow-up and interfere with eventual deviations from its strategy. Synchronising the mechanism’s time horizon with that of the strategy (both until 2020) thus added authoritative grip on the agencies’ temporal discretion. Contrary to proposition P1b, the shortening of the time horizon was apparently not followed by less voluntary interactions among the agencies to the mechanism. The mechanism was at the time (2017) about to enter its second mission. The deviation from P1b could thus be down to the agencies having yet to cement the time rules of the mechanism. In their recent evaluation, the agencies emphasised “[the mechanism’s] great value in coordinating Sweden’s work against antibiotic resistance” (Swedish Board of Agriculture [SBA] 2019: 5, author’s own translation). What they nevertheless recommended, was for the mission’s time horizon to be extended (SBA 2019: 6).

**Timetables**

For a process involving 20 agencies with distinct annual cycles, the government’s regulation of the coordination timetable appears rather “hands-off”. Besides annual reporting and preparations for the annual AMR Awareness Day, it has been for the partaking agencies to decide on the mechanism’s timetable (Interview F 2019). According to proposition P2a, giving the agencies temporal discretion to decide on timetables, more likely brings about voluntary interaction in coordination. The recent evaluation (SBA 2019: 5) stresses that agency officials with less AMR-related tasks to their primary responsibilities, see participation in the mechanism to enable
work on the issue. Timetable flexibility is likely not the exhaustive explanation but shows formal rules not merely to work in constraining, but also enabling ways (Sætren 2016: 29).

The government’s initial mission (GOS 2012) neither specified how the mechanism was to be structured nor all the agencies to be involved (its mentioning of policy sectors gave some direction). The agencies on the receiving end of the mission, the NBHW and SBA, were given much discretion to stake out the course of the initiative. In collaboration with agencies voluntarily drafted to the mechanism, they decided on a split structure encompassing a preparatory group (operational core consisting of nine agencies) and a “greater” group (all 25 actors) to decide on matters pertaining to the mission (Interview G 2019). The latter group was to convene twice a year (fall and autumn), the former two times more8 (Interview F 2019). With the renewal of the mechanism’s mission (2018–2020), it was decided to introduce monthly Skype-meetings for the preparatory group. This self-initiated change to the mechanism’s timetable was made to sustain the continuity in interagency information exchange (Interview D 2019). Yet another amendment to the timetable came from the government’s decision to make the chair of the mechanism a shared mission of the Public Health Agency of Sweden (PHAS) and the SBA (GOS 2017). The initial arrangement had seen the NBHW, then the PHAS (since 2015) as the main chair. Starting in 2018, the two agencies were to preside over the mechanism one year each. This meant participation on an equal standing for the health and food and veterinary policy sectors.

Central to the mechanism’s initial mission was to work out an action plan and communications strategy to guide the intersectoral work against AMR. The action plan was introduced in 2015 and revised in 2017 in conjunction with the renewed government mission. The latest version ran parallel to the mission’s time horizon (2018–2020). It added operationalisations, including time estimates for completion on the seven objectives established by the government’s AMR-strategy (GOS 2016; PHAS 2017). Although narrowing the scope for ad hoc initiatives from the mechanism, the government strategy provided welcome direction on what objectives to concentrate (GOS 2016; Interviews G 2019; H 2019). The mechanism still amounted though to a secondary structure with few additional funding resources. This meant the activities of the action plan had to be interwoven with the primary timetables (annual cycles) of the agencies. Progress in coordination thus relied on their using temporal discretion to reconcile primary (agency-specific) and secondary (mechanism-specific) timetables.

According to one interviewee (F 2019),

[…] it is difficult. 25 agencies are many, […] 25 agencies work with very many different matters, and everything is very urgent, and everything is very important. Clearly, in certain instances, we compete with the regular operations [of the agencies] (author’s translation).

8 A fifth summoning takes place at the Antibiotic Awareness Day in November.
The challenge is illustrated by the variation in how the agencies sequence their internal planning process, thus finalising their activity plan(s) for the upcoming year. Accordingly,

one has different planning cycles, [...] different ways of making decisions on budget resources, [and] completely different times of the year when things are important [...]. Some of the agencies lay down next year’s overriding activity plan during spring, and then add the details during fall. Other agencies plan the other way around. During spring, they gather suggestions to next year’s activity plan from within the organisation. During fall, they decide on the overriding activity plan for next year. [...] If I am to suggest something new to that agency, I need to bring it up in March/April at latest, because then we can come to an agreement. Hence, the need to understand each other’s planning cycles (Interview D, 2017, author’s translation).

The contents of the mechanism’s annual plan are agreed upon every autumn (Interview G 2019). Experience thus far suggests amendments to the annual plan are difficult to realise unless announced well in advance to all the agencies (PHAS 2017). At the year’s closing, when progress on set targets is reported to government, it is too late to make changes to the schedule for the upcoming year (Interview G 2019). On basis of agency calls for improved future planning (PHAS 2016: 7), the government decided to open for annual updates to the mechanism’s overriding, multi-annual, action plan (GOS 2017). This was to accommodate AMR’s dynamism, which complicates the prediction of developments in pathogenic resistance (PHAS 2017: 14).

The discretion granted to the agencies through less timetable fixation seems however to be a double-edged sword to the mechanism’s functioning. On the one hand, it creates leeway to establish a timetable voluntarily acted on by the coordinating agencies, on the other, it opens for deviation or delay. To mitigate the latter, the first evaluation of the mechanism recommended steps to secure the anchoring at the management level of each agency (PHAS 2016: 6). In response, the government’s renewal of the mission went out to all 20 agencies (not merely the co-chairs) of the mechanism (GOS 2017; Interview D 2019). Starting in 2018, each agency was to answer directly to government on their participation in the mechanism (Interviews D 2019; F 2019; G 2019). This did not prevent one agency from the environment sector from withdrawing its participation in the mechanism (Interviews D 2019; F 2019; G 2019). To strengthen participation from more agency constituents, the second evaluation suggested reporting requirements to be extended to additional agencies9 (SBA 2019: 6). More partakers needing to document their follow-up of mechanism tasks, suggests a tightening of the agencies’ temporal discretion. This could lead more agencies to partake in the interactions of the mechanism, not least since the recommendation comes from the agencies themselves. However, according to proposition P2b, such time rule amendment is less likely to bring more agencies into the fold of voluntary interactors. Instead, agencies already less present in the mechanism, are more likely to opt for a continuation, even entrenchment, of their stance.

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9 Up to this point in time, the reporting to government had been carried out by the two agency chairs.
This response pattern remains hypothetical but serves to illuminate that tightening the temporal discretion of coordinating agencies is not without risk.

**Agency know-how–limitation and resource**

Partakers in Sweden’s coordination on AMR seem well accustomed, at least within their own policy sectors, to the interagency coordination of tasks. One contributing factor is the specialised agency-structure with narrowly defined jurisdictions (Interview I 2019). Coordination has thus been necessary to ensure policy coherence (Interview F 2019). Sweden’s agencies from the health, veterinary and food policy sectors have a history with zoonotic disease prevention and control dating back to the late 1920s (Interview D 2017, Wierup et al. 2021). To them, the introduction in 2012 of the intersectoral mechanism on AMR, was “not really new” territory (Interview D 2017). In comparison, the agencies from the environment sector (third policy pillar of AMR) were quite new to the issue when joining the mechanism (NBHW 2015: 15). During the mechanism’s two preliminary missions (2012–2017, 2018–2020), what seemingly has manifested is cross-sectoral variation in the agencies’ presence. Hence, the paper suggests a potential caveat to its propositions: the cross-agency/-sectoral distribution of knowing how to manage AMR and, thus, to employ temporal, granted, discretion in coordination on AMR.

Of the health, veterinary and food agencies summoned to the mechanism, many had previously been part of bottom-up initiatives on AMR (thus indicating pre-2012 commitment to the cause). In 1994, following a rise in AMR-incidences, the medical profession together with health agencies and the National Veterinary Institute (NVI) convened to form STRAMA (Mölstad et al. 2008; PHAS 2014: 30–33; Gröndal 2018). Starting out as a voluntary network (one state-level and one in nearly all counties), STRAMA facilitated relationship building between the health, veterinary and food sectors. Gradually assuming the function of a hub for expert knowledge, STRAMA in 2000 contributed to Sweden’s first drafting of an action plan on AMR (Mölstad et al. 2008; PHAS 2014: 30–33). Thus, when given the mission to convene the mechanism in 2012, the health, food and veterinary agencies held knowledge of how to monitor and prevent AMR (Interview F 2019).

In comparison, no systematic approach to AMR existed in the environment sector (PHAS 2017: 19). Bearing in mind the positive agency evaluations of the mechanism since 2012 (SBA 2019: 5), officials from the environment sector have seemingly grappled with uncertainty on how to contribute. The granting of temporal

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10 Pathogens that are transmissible from animals to humans through direct contact or through food, water, and the environment (who.int/zoonoses/en/, accessed 6 September 2020).
11 Sweden was one of the first countries to initiate steps to eradicate tuberculosis in cattle at the end of the 1920s.
12 Its overarching goal is to preserve the efficiency of antibiotics.
discretion to set up the mechanism’s timetable seems neither to have generated a proactiveness in the environment agencies’ interactions. One interviewee (G 2019, author’s translation) puts it this way:\footnote{The environmental aspects of AMR have been lifted higher onto the international agenda (cf. UNEP 2017), but there are presently more questions unaccounted than accounted for. UNEP together with FAO, OIE and WHO are to present a report in 2021 on how to address AMR in the environment (Interviews B 2019; F 2019).}

[…] Much work goes on in the human, animal, and food sector. […] There is movement, which also makes it possible to coordinate because there are people to involve on various matters. The environment sector […] does not have the same tradition. […] Practically, it is unclear where, what and how to address [AMR] in the environment, [which] also makes it very difficult to actively coordinate since there is no concrete mission. There are not that many resources and personnel to draw on [from the environment sector].

The withdrawal from the mechanism by one of the environment agencies has coincided with losses of energy and efficiency for the remaining to follow up the tasks of the environment sector (Interviews F 2019; I 2019). The agencies to the mechanism thus stress the need for more active involvements from the environment sector (PHAS 2016: 6, SBA 2019: 7; Interviews F 2019; G 2019; H 2019; I 2019). The environment agencies however seem to require further clarification of the mission and future direction of the mechanism (Interview I 2019; SBA 2019). This suggests more clarity (and possibly time rule fixation) in the government’s mission to the mechanism.

**Concluding remarks**

This paper has suggested a framework for how to study time rules’ influence on agency interaction-patterns in the coordination of long-term, transboundary, challenges. The management of challenges such as AMR requires manifold actors to coordinate their actions for unconceivable time spans. This follows from the uncertain time frames to prevent the worst-case scenarios from manifesting. To government agencies, AMR management is potentially a secondary task adding temporal demand to their primary responsibilities. To ensure the progress they anticipate, governments may add formal time rules to the coordinated fights of the agencies. The paper presented four propositions on the agencies’ likely interaction-patterns from different time rule fixation in coordination. These applied to time rules that stipulate the time horizon (duration) and timetable (timing and sequencing) in coordination. The paper argued that in coordination on AMR (and the like), introducing time rules with less fixation make the agencies more likely to commit to the process and interact voluntarily. Agencies granted the temporal discretion to work out coordination’s structuring over time, more likely developed positive-sum perceptions of time investments in horizontal coordination vs. primary responsibilities. Time rules tightening the temporal discretion of the coordinating agencies, suggested zero-sum perceptions and reactive interaction-patterns.
To illustrate the paper’s framework, the paper conducted a case-study of Sweden’s intersectoral fight against antimicrobial resistance. The presence of multiple and distinct agency temporal schedules complicated the work of Sweden’s coordinating mechanism on AMR. The government agencies nevertheless appeared willing to invest time to sustain the process. The study showed how, under less time rule fixation, the agency representatives used their temporal discretion to develop the timetables of coordination on AMR. This self-organisation by agencies who voluntarily administer the coordination timetable to go with their primary timetables, seemed a persistent feature of the Swedish intersectoral mechanism on AMR. The study also suggested that the agencies with less pre-knowledge of how to manage the AMR-issue (compared to that of the other coordinating agencies) struggled more to keep pace with coordination’s progression (despite being granted the temporal discretion to do so). Overall, the paper considered the Swedish case to give support to its propositions, but recognised variation in the agencies’ historically accumulated subject knowledge to be a potential caveat.

Having presented a theoretical framework and case-study of how time rules impact on agency interaction-patterns in coordination, the pertinent question is where to go from here. The Swedish case, with agencies showcasing experience in the skill of interagency coordination, is arguably a most likely case for the paper’s theoretical framework. Thus, “if [the paper’s propositions] cannot make it [in Sweden], [they] cannot make it anywhere” (Levy 2008: 12). Hence, the paper’s invitation to apply its propositions in comparatively tougher (less likely) public administration settings, and, moreover, compare coordinated actions on issue-areas whose time horizons vary (climate change, AMR, COVID-19, etc.). Time rule multiplicity proved after all a challenge to interagency coordination in Sweden and should thus be a noticeable (perhaps even more pronounced) challenge elsewhere, too.

List of interviews

(A) Senior executive officers, Swedish Ministry of Enterprise and Innovation, 16.02.2017.
(B) Senior executive officer, Swedish Ministry of Enterprise and Innovation, 15.05.2019.
(C) Senior executive officer, Swedish Ministry of Health and Social Affairs, 28.02.2017 (by phone).
(D) Senior executive officer, Swedish veterinary agency, 15.06.2017 & 14.05.2019.
(E) Senior executive officer, Swedish Board of Agriculture, 21.02.2017 (through Skype).
(F) Senior executive officer, Swedish Board of Agriculture, 09.07.2019
(G) Senior executive officer, Swedish health agency 1, 15.02.2017, 14.06.2017, 15.05.2019, 03.07.2020 (e-mail correspondence).
(H) Senior executive officer, Swedish health agency 2, 05.07.2019 (through Skype).
(I) Senior executive officer, Swedish environment agency, 24.09.2019 (through Skype).
(J) Senior executive officer, World Health Organization, Geneva, 25.11.2019.
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Martin Stangborli Time holds a master’s degree in political science from the University of Oslo. Since 2015, he is PhD Research Fellow in Public Administration at the University of Agder. In 2018–2019 he was Laufer Doctoral Visiting Fellow at the Geschwister Scholl Institute of Political Science, Ludwig-Maximilians-Universität München. Martin studies the impact from power and temporality on the public sector coordination of transboundary threats. His PhD-project focus on a specific case of threat management, the global fight against antimicrobial resistance.